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OBSERVATIONS ON GOUT. By JAMES SANDERS, M. D., Edinburgh.

This is an attempt to give a pathognomonic conspectus of gout. Pathological it is not, since I merely wish to know *what the thing is*, postponing all the correlative subjects of diathesis, predisposition, causes, explanation, and treatment.

My materials are thus arranged:

1. Several cases are fully narrated, and to some of them is annexed the anatomical exposition of the changes that had, during their progress, been produced in the organization.

2. The different forms or stages of the disease.

3. Such remarks are interspersed as the particular circumstances suggested.

4. The inferences to which the whole seems undeviatingly to have conducted me.*

Case I.—Mr. —, when about 17 years of age, had a severe fever, from which recovery was slow, but apparently complete, as he enjoyed good health till towards the end of 1817, when he complained of indigestion and uneasy feelings in different parts of his body. In 1818, came on acute pains in the inferior extremities, soon followed by swelling and deep erysipelatous redness involving the ankles and

* The following applications occur which seem to require definition:

Encephalon.—All that is contained within the cranium.

Spinal Cord.—The spinal marrow with its membranes or tunics.

Medullary Elongation includes *crura cerebri*, *tuber annulare*, *medulla oblongata*, and *medulla spinalis*.

Centre of the Nervous System or Nervous Centre, means that continuous mass of nervous substance which occupies the osseous cavities of the cranium and spine.

Cerebellic Cavity.—That portion of the skull which contains the cerebellum, and part of the medullary elongation.

Arthritis.—Affection of the joints as connected with and depending on gout.

Arthritic.—Liable to, belonging to, or troubled with, arthritis.

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feet; these were accompanied with general excitement; and before the inferior extremities were well, he was seized with a sore throat, very distressing, painful, and obstinate. During this his head suffered much, chiefly from confusion in his ideas, and a sense of weight; his eyes became suffused and his vision impaired. There soon supervened a numbness and deficiency of power in the right side, but the right arm annoyed him most, as it obeyed the will very tardily; and he could not hold the pen.

After he became convalescent, the affections of the head, eyes, and right side remained; his memory was deficient; his mind uneasy, dissatisfied, and apprehensive; he was occasionally qualmish, but upon the whole his appetite and digestion were good. This chronic state was sometimes interrupted by the sudden accession of acute headach, throbbing of the temporal arteries, and turgescence of the vessels of the *tunicæ albugineæ*. Practically neither the sanguiferous nor the digestive organs had been spared, but he thought himself worse after every bleeding, whether general or topical; nor did the cathartics succeed better.

In the autumn of 1825, for the rigid antiphlogistic plan the following was substituted. Night and morning the head was to be bathed with cold water, containing an equal portion of spirits and vinegar, and immediately after well rubbed with a soft dry sponge or towel; then also stimulating liniments were to be rubbed all along the spine, and on the right superior extremity from the scapula to the points of the fingers. His diet to be gently nutritious, exercise in the open air to be taken cautiously, but only in good weather; nor were the natural evacuations to be neglected. If, however, at any time his head should be attacked as above described, his orders were to confine himself to his room, and use the antiphlogistic regimen till the exacerbation subsided, and no longer.

Now and even after, his pulsations were somewhat unequal, never almost in number above thirty-six per minute, and even just after walking, rarely above forty. The heart rolled heavily, but beat synchronously with the arteries; his respirations were from fourteen to twenty.

It is easier to give advice than to have it followed. He seldom neglected the frictions on the right arm, and he gained the power of it so far that he could write easily. He used the tonics for several weeks, and found his health and vigour to such a degree restored, that he considered himself freed from all restraint. The consequence was, that his head soon troubled him as formerly. He recurred to low diet and purgatives, and persevered till a feeling of stupor became permanent, and his general system was nearly as much enfeebled as ever it had been. Conscious that he was rapidly sinking, he, of his own accord, resumed the tonic course, and again his health recruited wonderfully.

This account I had from the patient, of whom I saw little till September, 1826, when his general appearance was remarkably improved; but he complained of indigestion, and his eyes were yellow, which symptoms readily yielded to pills containing a small share of calomel, though they were immediately succeeded by transient returns of sickness at stomach, and shifting pains in the loins and extremities. I told him that I now suspected gout more strongly than ever, and entreated him to recommence and go on with the lavations and frictions. He did so, though not assiduously. On the 22d October following, he had an attack of gout in the right knee, ankle, and great toe. Here it continued for a few days, and passed to the left inferior extremity. This paroxysm confined him about eight days. On November 5, he had another bilious disorder followed by gout in the feet. From this time he complained frequently of pains in his feet; and during the spring of 1827, he was twice attacked with regular podagra. While his feet were affected, his general feelings were agreeable to him; his mind was comparatively cheerful, and his body active; he even indulged the hope of ultimate recovery. His pulse, however, never improved; it continued always heavy and slow. While under the tonic treatment, the painful affection of the head never occurred. He had once or twice a slight throbbing only of the temporal arteries.

This gentleman was often cautioned against damp weather, or getting his feet damp or cold, particularly when he felt pain in them. He was even assured that he might die suddenly from rash exposure, or any unguarded exertion of mind or body; but either morbid apathy or natural incredulity prevailed, for he proved quite heedless and uncontrollable.

Early in October he had a smart fit of podagra, which kept him to his sofa nearly a fortnight. The swellings all subsided, but his toes were still uneasy. In this state on the 20th, a cold wet day, he went upon some business, and sat in a cold room two hours or more; came home, and fell down seemingly lifeless. I arrived soon after, and his senses were returning. In a few days he had another fit of the same kind. He was bled at the arm, came to himself again, though not with symptoms equally favourable as on the former occasion. Alarming prostration ensued; his mind was

bewildered; breathing oppressed; pulsations hardly perceptible at the temples and wrists, and they seemed to have quite abandoned the inferior extremities. The whole surface of the body was cold and clammy, and deadly so his hands and feet.

A cap blister was put on the head, sinapisms on the breast, and on the extremities from the elbows and knees downwards. Antispasmodics were administered internally. In a few hours the arteries beat distinctly about twenty-five times per minute at the temples and wrists, and moderate heat was restored to the superior half of the body; but the mustard was kept to the inferior extremities full twenty-four hours before rubescence was induced, and then heat and pulsation returned together. After this escape he recovered considerably, and was as careless of himself as ever.

In the beginning of January, 1828, he encountered his last attack of gout, which seized the right, and in two days after the left foot. His head became easy, his mind lively; the beats of the arteries rose from 36 to 38 and 42 per minute; the erysipelatous swelling gradually increased, was very painful on the 5th and 6th days, and then gradually declined. On the evening of the 11th the feet, free from pain, were slightly œdematous. He said that he had had some vertigo in the forenoon, which was entirely removed by taking food. His pulsations were now about 50, weak and irregular. I replied that I neither liked the vertigo before dinner, nor the total absence of pain in his feet, and advised him to have mustard applied to them and to his head. After I left him he amused himself for more than two hours, got up, and walked about with uncommon ease and spirits. "I never," said he, "felt myself better. I think I may enjoy myself this one night, and to-morrow I will use the Doctor's prescriptions." At nine next morning his daughter asked him how he had passed the night. He answered, "Very well, indeed." She left him, and in three hours after he was found on the floor by the side of his bed, dead.

No noise of falling had been heard; no sign of convulsion, or spasm, of bruise, or injury, was discovered on his body. He lay at full length with his face downwards; his countenance was blue and swollen; but these appearances went off when he was laid on his back. From every circumstance there could be little doubt that life had been extinct at least two hours.

Dissection.—Twenty-four hours after death, 13th January, 1828.

General appearance.—Plump, and rather tending to obesity.

Head.—Skull dense, of unequal thickness from the temporal bones backwards, grooved internally in the tract of the meningeal arteries, strongly adhering round the corona to the dura mater. Serous and gelatinous effusion on all the surfaces of the cerebrum and cerebellum. When the encephalon was removed, serum and blood flowed through the foramen magnum, and the blood continued to

flow copiously, as is usual in such cases. Cerebrum, cerebellum, tuber annulare, and medulla oblongata, all much softened. The basilar artery was enlarged, exhibiting progressive ossification, which appearance pervaded the circle of Willis, and the vessels in the fissuræ Silvii; all the other vascular tubes seemed attenuated, soft, and fragile. There were red patches of small turgid vessels on the medulla oblongata and corpora quadrigemina, on the roots of the second, fourth, eighth, and ninth nerves. The optic nerves were smaller than usual, and in the third ventricle there was partial cohesion of the thalami; all the ventricles were full of water. The plexus choroides in different parts imitated hydatids, from limpid serum distending its cellular membrane. On the interior surface of the lateral ventricles some blood-vessels were conspicuously ramified, as is common when water is contained in those cavities; but no distention any where of the larger vessels, and the mass of the brain was as free from any vestige of redness as if the blood had been withdrawn, and the heart had become unable to furnish any supply. In each hemisphere, from about the centre of the middle lobes forwards, were small bullæ or cysts full of a yellowish fluid, seven of these were counted, four on the one side and three on the other; the cineritious substance surrounding each bulla was morbidly dark and losing its consistency. Though both hemispheres were diseased, yet the right had suffered more than the other.

Spinal canal.—Dura mater in general sound. As soon as it was slit open, turgid vessels of a vermilion colour were seen on the cervical and lumbar portions of the spinal marrow, and some solitary red vessels from these diverging along the nervous cords. On the arachnoid coat in the lumbar part appeared minute ossifications. The substance of the spinal cord, like that of the brain, was very soft and nearly bloodless. The sinus venosi of the canal were full of dark blood,—an occurrence presented in almost every instance of sudden death.

Thorax.—Lungs sound; strong cohesions on the right side between the pleuræ. Heart a little enlarged, its cavities full of dark fluid blood; the parietes of its right ventricle were thinner, and of its left, thicker than they should have been.

Abdomen.—Spleen a little too large; left kidney a little smaller than the right, both too dark in their cortical substance, and the pelvis of each contained a yellowish clammy fluid. *Cætera sana.*

Remarks.—The history and the anatomical appearances just detailed give a nosological view so much the more interesting, that the case is almost a complete specimen of this genus. The malady exhibited itself first in the inferior extremities and afterwards in the head, scarcely sparing in its ascent the functions of any intervening part. An instructive contrast is furnished when the arthritic die of some superinduced or incidental misfortune; in them are disclosed the primary limits of gout, as if accurately circumscribed. Where

the inferior extremities are chiefly attacked, the lumbar, but where the superior extremities, the cervical, portion of the spinal cord shows the peculiar condition connected with the paroxysms.

Convinced by ocular demonstration, it is many years since I taught, that the centre of the nervous system is mainly concerned in arthritis, and in a great number of other corporeal calamities; but in none is the dependence of external upon internal motions more clearly evinced.

It seems not improper in this place to admonish the practitioner, that opening a body, and seeing that one or more of the viscera have suffered, affords little information, and no satisfaction. To detect the origin, to trace the sequence, to perceive how any one peccant organ influences the rest, to discriminate among conflicting results, to have a mental retrospect, to devise from concentrated intelligence, the means of counteracting the causes and of restoring health, is the labour and the delight of the pathologist; and he who has not undertaken that labour and felt this delight, were he as profound in general philosophy as Bacon, in astronomy as Newton, in ancient literature as Porson; had he read all the books from the days of the mythological Hermes to those of our modern visionaries, is nevertheless an empiric in medicine.

It was suggested that the example already given comprises what more or less occurs, wherever chronic gout has prevailed; nor will this opinion be invalidated by the cases next to be related, from which it also appears, that by whatever means, specific or dogmatic, according to whatever method, be it of Sydenham, Cullen, or Brown, gout is treated, it almost with equal pace proceeds to the same kind of termination.

Case II.—A gentleman, about 64, of strumous habit, rather tall, and inclining to obesity, had, the last third part of his life I believe, been afflicted with gout, and had long taken, by the advice of his medical attendant, the *eau médicinale* very freely during the paroxysms. This drug induced sweating and copious dejections, followed by cessation of pain. He was liable to indigestion, accumulation of bile, and palpitation, from which last symptom it was inferred that his heart was diseased, and the aortic valves ossified. I first saw him professionally in the spring of 1814. He was despondent, complaining of vertigo, and even some degree of stupor; the joints of his extremities were stiff, and his voluntary movements all feeble and languid. He had not for some time been disturbed by the palpitation; the pulsations were now synchronous at the heart, temples, wrists, and ankles, in number between 60 and 70 per minute; though much annoyed with flatulency, his appetite was tolerably good; his respiration was seldom uneasy, and he could lie on either side; his abdomen was tumid, without any perceptible fluctuation; his urine in the usual quantity, and bowels regular, or readily answering to gentle aperients.

Tonic bitters and stimulating frictions were

prescribed, and he was advised to take no more of the *eau médicinale*. His feelings were in a short time alleviated, his mind enlivened, and all his actions more at his command; but on the first recurrence of pain in his feet he could not, and afterwards would not, abstain from the *eau médicinale*. About the beginning of September, 1824, he seemed feverish and unhappy. He gave no account of his feelings more than that "he was not as he should be." On the morning of the 11th, he complained that he had passed a restless night, and that his head was confused, adding, that "he was tired of all medical interference." That day he transacted his usual business; and next morning, being much better as he thought, he congratulated himself "on having out-witted the Doctor." He went about three quarters of a mile to a tax-office, and while paying his taxes, fell in an instant dead by the side of the counter.

Body examined 13th September.—*Head*.—Skull thick, grooved internally in the tract of the meningeal vessels. Serous effusion over all the surfaces of the brain, and surrounding the medulla oblongata. From two to three ounces of clear fluid in the ventricles; the longitudinal, lateral, and all the minor sinuses full of dark blood; the vessels also on the cerebrum and cerebellum, the vena Galeni and its branches, so far as they could be traced, the basilar vessels, and those of the circles of Willis and Ridley, all turgid with dark blood. Patches of minute vessels about the nates and testes, and on the medulla oblongata, of a purple or deep red colour. The choroid plexus partly purple and partly blanched, and its cellular tissue distended with serum. The masses of the cerebrum and cerebellum were bloodless, and so soft that their structure would not admit of distinct demonstration. When the encephalon was removed, fully a quart of dark fluid blood escaped through the foramen magnum.

Spine.—The internal substance of the vertebræ was of a dark purple from vascularity; the sinus venosi of the canal were dark and turgid; sero-gelatinous deposition surrounding the dura mater, most copious in the lumbar portion; the dura mater of a dull brown colour along the cervix and loins; slight serous effusion within the dura mater. The anterior and posterior vessels of the spinal marrow very much distended and rather dark, and such distention occupied most of the surface of the spinal marrow, about the middle of the cervix, and from the ninth dorsal vertebræ downwards. Many turgid vessels were likewise continued along the nervous cords, particularly of the cervical portion, and of the cauda equina. The substance of the spinal marrow was much softened, and here and there variegated with real vessels.

Thorax.—A small quantity of serum in each cavity, as also in the pericardium. The heart and descending cavæ nearly empty. Blood fluid, but there were small coagula in the auricles.

Abdomen.—Some serum effused here also.

Liver a little increased in size, and of an irregular yellow colour; its internal structure resembled granite, and was unequally indurated. Spleen too exceeded its usual dimensions, and seemed as if composed of grumous blood. Prostate gland considerably enlarged. *Cætera sana*.

Case III.—I knew a physician who prescribed the *eau médicinale* freely, giving as his reason one most cogent with the patient, "that he himself derived the greatest benefit from it." He no doubt took it as liberally as he prescribed it; nor was he averse from the assistance of opiates, or the exhilaration of strong liquors, but all the misery of atonic gout at length overwhelmed him.

Case IV.—In the spring of 1812, I was called to a gentleman, about 45 years of age, suffering the most excruciating torture from gout in both feet, and many years he had been visited by such attacks and of long duration, till some one advised him to try the *eau médicinale*. This drug, taken according to the printed direction, astonished him; it excited commotion in the stomach and bowels, with copious perspiration, bilious dejection, and inexpressible relief, followed, however, for some time by great languor and debility. On this and another occasion the *eau médicinale* was dispensed with, but he complained that relief was not so speedily obtained, though he confessed that he was neither so exhausted nor so infirm afterwards. He was of a convivial disposition; rich viands and generous wines were the gods of his idolatry. For a year, however, or a little more, though he could not in extreme pain resist the specific, yet he adhered to a moderate dietetic regulation, and his paroxysms were fewer and milder, but he could no longer endure this restriction. He declared that "he would rather die than have life prolonged upon such terms." The paroxysms returned more frequently and more severely, if possible, than ever. From this time the patient ministered to himself. By the year 1815 the paroxysms were nearly subdued, and so were the faculties of his mind and body. He understood what was said to him, and distinguished one person from another, so far his intellect was sound. His vision was much impaired, and so were his voluntary movements. In this sad plight he lingered two years more, and then died suddenly.

Case V.—Mr. ———, an innkeeper, and *bon vivant*, a man of the kindest disposition, but irascible, had been visited for many years at the usual seasons by gout, chiefly in the inferior, but sometimes in the superior extremities also. Anorexia, lumbago, and piles, were almost his daily attendants. He had borne vicissitudes like a philosopher; he enjoyed himself when he could, and often indulged more than he ought to have done.

When gout threatened his extremities, he always relied on the *eau médicinale*. It never failed to afford him speedy relief, and to shorten the paroxysm. I told him in 1820, that the use of this supposed antidote would, in no long time, bring on apoplexy or palsy. Even

then indeed his limbs were enfeebled, and his speech and vision impaired. He complained of his flaccid virility; for, said he, "I am not above 60!" The warning which I gave him, made some impression on his mind. He endeavoured for a while to live more moderately, and never again took the specific so profusely; but still when in great agony he applied to it.

Early in the morning of 24th July, 1824, he became suddenly senseless, speechless, motionless. The previous night he had made copious libations to Bacchus, and an unusually brilliant display in his own kind of oratory. He had never in his life drunk more, vociferated more, been more happy, or carried to bed more completely overwhelmed with sopor.

When I arrived I learned from his eyes that he knew and heard me. He made some vain efforts to speak; his breathing was heavy and slow; his pulse a little accelerated, irregular, and feeble. The surface was in general cool, the extremities cold, and on his forehead a clammy sweat. Aware of his habits, I ordered him a little brandy; he took it, showing no palsy in the willing organs of deglutition. In about half an hour Mr. Liston came to my assistance.

The first day his treatment internally was rather antiphlogistic; while externally friction was assiduously employed. After this he was allowed wine moderately, and nutritious food in a liquid form, to which in a day or two tonic bitters were added. Gradually the voluntary muscles regained their capability, and his speech improved. He began to complain of severe pains all along his extremities; but we made no change in our prescriptions. In about ten days the gout appeared in tremendous force from the elbows and knees downwards. His mind resumed its wonted activity, and his articulation or pronunciation became much as it was before the apoplectic attack. The limbs, where affected, continued red, swelled and painful for several weeks; and on the decline of these symptoms he was ordered a little solid food once or twice a-day, according to his appetite, and a little brandy, particularly when he felt uneasy at stomach; and all the time he had anodynes in the evening. Now locomotion was restored, though not so completely to the right side; and of the right hand he had still no use. He lived by rule; nor were the frictions and occasional application of sinapisms ever omitted. In two months from the attack he was brought to temperance, air, and exercise in the country. Having regained health and vigour, he returned to town, business, and old habits. He continued, however, tolerably well till September 25, 1825, when he got mortally intoxicated. Next day he purged himself severely by taking saline laxatives; and on the third day supervened the most complete atony. It was not palsy, but almost total inability to speak or to move. His pulsations were pretty regular, about 80 per minute; heat of skin natural. He could still take food, and mild aperients readily operat-

ed. He knew all those about him, and seemed quite sensible of his situation. All medical efforts were in vain. He died on the 22d October.

Remarks.—It happens that in these cases the *eau médicinale* holds a conspicuous place; but all the specifics for this disease hitherto extolled, though differing in other respects, resemble one another in this, that they alleviate and subdue the attacks of the regular, while they accelerate the transition into the atonic gout. In confirmation I might appeal to the records of medicine; but I trust that one or two instances more will answer my purpose.

About the middle of the last century a prescription known from, and probably before the time of Galen, was introduced into England by the Duke of Portland, and hence obtained the name of the Portland Powder. Its chief ingredients were the *Aristolochia rotunda* and gentian root. Dr. Cullen in his practice of physic says, "In every instance which I have known of its exhibition for the length of time prescribed, the persons who had taken it were indeed afterwards free from any inflammatory affection of the joints, but they were affected with many symptoms of the atonic gout, and all, soon after finishing their course of the medicine, have been attacked with apoplexy, asthma, or dropsy, which proved fatal."

The author of the theory of excitability tells us somewhere, that the relief afforded him by a large dose of opium, taken when he suffered the most exquisite agony of gout, forced upon his observation not only the stimulating properties and paramount utility of that substance, but inspired him with the idea of his peculiar system! What the results were of his practice his own case will best show. *Case VI.*—Dr. Brown was of an ardent disposition, and his genius of no ordinary mould. He had many admirers; but vanity and improvidence involved him in difficulties inextricable. Conviviality, inebriation, adversity, and gout, occupied one-half of his life. Whenever he dreaded or determined to subdue a paroxysm, whenever, from any cause, wretched, he took immense doses of laudanum. "Nemo," dixit ille, "opiato sumpto sibi mortem conscivit, aut unquam conscisset."

On the 6th October, 1788, at his house in Golden Square, London, he delivered a lecture with much animation and vehemence. In the after part of the day his face, eyes, and eyelids were observed to be turgid, and his cheeks unusually flushed. In the evening he swallowed a copious draught of laudanum. Between five and six o'clock next morning he rose; walked across his apartment; saw it was too early to rise; returned to bed, fell into an apoplectic sopor, and expired in a few hours.*

Remarks.—Novel doctrines upon an emer-

* Life of Dr. Brown, by his son, William Cullen Brown, M. D. p. 144, &c. London, 1814.

gency will be adopted in practice even by their most strenuous opponents.

Case VII.—About twenty-four years ago an elderly gentleman, addicted to rich viands, potent liquids, and the gout, was seized apoplectically. Two eminent physicians, declared enemies of Brunonianism, attended. Sorely perplexed, that, in defiance of depletions and prohibitions, had run rapidly into worse, they ordered that he should have glasses of brandy repeated at very short intervals. When they met again, finding the patient surprisingly better, they prescribed an opiate, congratulated the family, and departed. He did not neglect the brandy; and next morning he was as lethargic as ever. They regretted the stimulation, bled him profusely, and enjoined diluents. Once more his mental faculties revived,—but to cease for ever in a few hours.

I recollect well the conversation which ensued between the learned practitioners. "Is it not strange," said the one, "that means so opposite in their nature should, at least for a short time, have produced the same effects?"—"Have I not often told you," replied the other, "that our art, except in a few simple instances, is altogether a deception, even to ourselves. We very seldom know either what we are doing, or what we ought to do." I believe, however, that morbid anatomy has, within these few years, done much to remove the opprobrium then so just and so candidly admitted. The specious generalizations which ruled medicine, overruled intellect, benumbed the practitioner, and retarded the science. The British pathologists are delivering themselves from this thralldom, while those on the Continent of Europe, with all their boasted advantages, are forging for themselves anew the chains of hypothesis. Dædalus, as the poets feigned, constructed a labyrinth in which he and his offspring were imprisoned. This is an ingenious allegory, most aptly representing the infancy of knowledge.

Case VIII.—Twelve years ago I was called to an honourable baronet, about 65 years of age. Seventeen or eighteen months previous, apoplexy had come suddenly upon him. Under copious venesection, &c. the head was relieved, but paralysis of the right side and its extremities remained. This gentleman had been subject to severe paroxysms of gout and politics for many years. When I saw him his inferior extremities were enormously swelled with water, nor was he quite free from hydrothorax and ascites. I remarked to him that his arteries beat very unequally. "That," answered he, "gives me no concern. My pulse has been unequal and intermitting as long as I can remember. Dr. *Monro Secundus* warned me twenty years ago that my heart was diseased, and gave me many precautions which I never attended to."—"But my health," continued he, "is improving daily, though slowly. I am assured that the swellings, though they are increasing, will depart in proportion as my strength returns; and even now I am able to move a few paces in my chamber with the help of my servant. What I wish to

consult you about is my little finger here; it is so contracted that I can make no use of it in attempting to play on the flute." In reply, Your health, sir, does not appear to me so safe as you imagine. Telling you that returning strength will put away the swellings, is just the old proverb, "that you will get well as you grow better." In my opinion, two legs are of much more value than one little finger. The same means that will remove this dropsy will at the same time invigorate your general system; and this is the best method even of affecting your finger, though I would not flatter you respecting it; for such contractions are seldom, if ever, entirely removed.

We moderated the rigour of abstinence; commenced with diuretics, tonics, and frictions; in a few weeks the swellings had disappeared, and he could walk without assistance; all was promising, except the intractable finger. While he thought himself doing well, some one represented to him that he was recovering too rapidly, and in consequence he resumed his starving course, and went to the country. In a short time, however, his dropsy returned, and at last apoplexy again laid him prostrate. I was sent for, but two other medical gentlemen were there before me, and had determined to abstract blood profusely from the temporal arteries. I dissented for these reasons: that the preceding state of his health, his atonic gout, his serous effusions rendered it probable, that even now effusion had occurred within the cranium; and if it had not, such abstraction would insure it, and deprive the patient of any chance that he might have.

Forty ounces of blood were taken; great relief followed; sanguine hopes were indulged;—in eight days he died.

Dissection.—The brain was deluged with water, all the ventricles very much distended, and the whole cerebral mass might be said to be deliquescent. There were such gelatinous depositions, and unequal vascular turgescence, as are so often observed deluding the tyro in pathological researches with the *ignis fatuus inflammationis*.

The heart was hypertrophic, the valves of the aorta partly, and the orifices of the coronary arteries completely ossified; the interior surface of the aorta also exhibited ossific formations in different stages.

Nothing else remarkable.

The spinal cord was not inspected.

Mr. ——— about 70 years of age, of middle size, short neck and corpulent, lived well, was naturally active in mind and body, took much exercise, and generally enjoyed vigorous health; though latterly he was dyspeptic, and troubled with what were called bilious headaches.

On Wednesday, 3d December, 1817, he had entertained a party at dinner, and in the evening, while playing a rubber at whist, he was seized with a shivering fit, which obliged him to go to bed. He complained of pain in his right foot and leg, and in the morning these parts were swelled, and invested with a

rosy redness. Slight fever was present. On the supposition of inflammatory erysipelas he had cathartics and diluents, but during eight days obtaining no alleviation, he became impatient. A celebrated physician was called in, who commanded venesection to be performed. On the morning of the 10th about 15 oz. only were abstracted; prostration of strength ensued, pain ceased, but in the evening gangrene occupied the limb, torpor the head! On the 12th I saw him. He lay stretched on his back at full length in bed without pain, and incapable of fear. From about four inches below the knee the limb was one black, tumid mass, the great toe enormously swelled, and covered with unseemly vesicles. His pulse was hardly perceptible; his respiration slow and calm. Though stupified, when spoken to he answered distinctly. His eyeballs were a little tumid, and the eyes had a leaden, heavy, sluggish motion, when he directed them towards any object.

I told his family that no hope remained, and that medical interference could avail nothing. On Sunday the 14th, at 3 P. M. he ceased to live.

Remarks.—It appears that gout of every form, and under every variety of treatment, proceeds more or less steadily through a determinate course. It may be a question, whether, if left to itself, the phenomena would still be the same? I think this may be answered in the affirmative. From Sydenham to Cullen the *methodus medendi* was such, that it could neither subvert the natural, nor counteract the superinduced tendencies of the animal economy. Now that long period has furnished no instances in which the arthritis did not pass into the third stage, that of atonic or asthenic gout, nor any in which the disease, whether regular or irregular, did not exhaust the centre of the nervous system.

THE DIFFERENT FORMS AND STAGES OF GOUT.

Hitherto our attention has been principally directed to that form generally called the atonic, which in my opinion should rather be considered the third stage of gout. It bears the same relation to the regular arthritis that passive does to active inflammation, or chronic to acute ophthalmia.

It is of great importance also to be aware, that gout often creeps on insidiously; sometimes imitating the atonic form, and not unfrequently so equivocal are its symptoms, that they are apt to deceive even the most skilful. No organ is so liable perhaps to its invasion as the stomach,—indigestion, acidity, and uneasiness are complained of, coming on and going off without any assignable cause; and not prevented or removed by endeavours to improve the diet, regulate the bowels, or strengthen the digestive organs. The liver is also accused, and bilious evacuations are followed by almost instant alleviation. Pains fleeting or fixed in the ribs and loins; sediments in the urine, amorphous or crystallized; the heart palpitates; the head is uneasy; the bowels are variable; nor in those particularly of 40

years and upwards, must we overlook the repeated occurrence of dysuria. What are here specified are the accidents which arise either separately or conjointly; but it were equally vain to attempt the description of the transitions between the external and internal parts, as to enumerate all the other multifarious, erratic, and enormous occurrences. Such intruders often vanish as if by enchantment; the person relieved becomes at once cheerful and happy, while those about him look upon these alternations as equally groundless and imaginary.

This uncertain state may continue for months or years, when at length gout appears in what is supposed to be its generic complement; and then, notwithstanding the tortures of the paroxysm, the load of misery that is thrown off is astonishing. The patient now knows his disease, and flatters himself that nature has supplied the remedy; the fit introduces months of good health, and he welcomes the next vernal or autumnal recurrence as the pledge of security and safety, little dreaming that the paroxysms will return at shortening intervals; that they will involve all the extremities, thickening, stiffening, and disabling every joint; and that, abating in their fury, they will leave the very fountain of life irretrievably deteriorated, thus ushering in the complete atonic gout, the fatal termination of which, though often accelerated, has never yet been averted.

It is not to be inferred from this sketch that the preparatory or premonitory efforts of gout always, by ultroneous concentration, declare their nature in the extremities. It is impossible indeed to predict where the formidable assault is to be made. I have seen the chest seized as if with acute pleuritis; the heart, carditis; the abdomen, peritonitis; the stomach, gastritis; the throat, cynanche, or dysphagia; but none of these so frequently nor so variously as the head; and countless are the instances of sudden death from the impetus against the brain. What happens in the feet we have all witnessed. Now let us reflect what must be the consequence of a sudden yielding, filling, and distention of the vessels within the cranium! *Procumbit humi bos.* It is, people say, a great hardship, for any one to have died without assistance. Be that as it may, I have more than once had reason to ascribe the preservation of life to this circumstance, that the paroxysm subsided before the physician arrived. Since Stahl, the controversies and disputations have been resuscitated about trusting to the powers of nature, which, in modern Gallic phrase, is the *Medicine of Expectation*. But true it is, that he who does study when and when not to wait, is more dangerous to mankind than disease itself.

The fact that gout often proves fatal without having assumed any decisive character is not peculiar, for the same thing is observed in other diseases. How many have there been cut off in the preparatory fever of small-pox? The disposition, indeed, to the definite course, is so evident, that those circumstances and ac-

cidents, which so often interrupt it, without invalidating the rule, demand serious investigation.

Nor in this disease, which is as capricious as hysteria itself, are we always to expect a well-marked or fixed attack upon any of the organs; and as little are we to believe, that, should an attack be made, it must be sthenic or inflammatory. On the contrary, the head may become affected with dulness or stupor; the heart with languor and irregularity; the respiration may become heavy or asthmatical; the functions of the abdominal viscera disturbed and feeble; and the extremities may be struck with paralytic debility.

And this sudden loss of power, whether partial or general, is not peculiar to gout. I have seen the same thing in the first stage of the common continued fever. It is well, however, when reaction supervenes, and the local affections change from the torpid to the acute; but torpor succeeding activity is always unfavourable.

The premonitory symptoms and occurrences are here the more solicitously dwelt upon, that they are the most frequently mistaken; while it is during their prevalence alone that our art can be most usefully and efficiently exerted. But if the real atonic state, which I afterwards call the subsecutive stage, has been established, our duty is limited to the protracting of life and the alleviating of misery.

Sauvages affirmed that there was but one species of gout, and Cullen is inclined to agree with him, though he thinks that the following varieties deserve attention, viz. the regular, the atonic, the retrograde, and the misplaced or aberrant. According to him, the sign of the regular form of gout is "pretty smart inflammation of the joints, which continues for some days, and gradually recedes, with swelling, pruritus, and desquamation of the affected part." The other three appellations he includes under the general epithet irregular; and so he might, for they designate no distinct varieties, but merely symptoms which occur indiscriminately in all the unsettled forms of this disease. As was the custom of the age in which he lived, he attended more to what had been written than to what nature dictated,—to disease more as a matter of history than of daily observation; consequently he perceived no difference of indication between those symptoms which preceded inflammatory local action and those which succeeded. When what he called the regular form was not assumed, he pronounced the disease to be irregular, and then treated it more or less as of the atonic description; nor was his use of stimulants, particularly of brandy, less liberal than that of his antagonist, Brown. Disorder of function and change of organization made no difference in his estimation. On such views no appropriate scheme of practice could be formed, and the mischief done must have been incalculable.

The account of gout just given seems to expose three states or stages, which may be

called the preparatory, the regular, and the subsecutive. The first and third, though mightily different from, yet resemble one another in their delusive and wandering habits; but the second, though not exempt from shiftings and transitions, is upon the whole distinguished by its uniformity, as well as by its effects upon the joints.

We should reasonably suppose that the parts primarily disturbed would be differently affected in each of these states.

The preparatory cannot be connected with any great or permanent lesion of structure, since it terminates in the regular,—a complete paroxysm of which shall be followed for months, or even years, by the full enjoyment of health. Nor can any ordinary fit of the regular have produced great or extensive lesion, since, in consequence of it, all the functions or faculties are renovated. But when the paroxysms lengthen and recur at shortening intervals—when they vacillate in degree and mode—when there is shifting from one part or organ to another, external or internal—when the brain, the heart, the lungs, the liver, the stomach, the bowels, the kidneys, separately or simultaneously evince disorder—when cramps, spasms, and pains, with stiffened joints and general asthenia, prevail—when vertigo confuses, and gloominess and timidity take possession of the mind—when the fingers or toes are contracted or powerless—when vision and speech are impaired—when a leg or an arm is paralysed—when fainting or apoplexy overwhelms,—without any claim to superior sagacity, you may suspect that more deep impressions have been made than during either of the preceding stages.

Conversant in structural deviations, use your scalpel, and your suspicions will be converted into certainty. When in the first, or early in the second stage, life has been intercepted by seizure within the cranium, the apoplexy is sanguineous; there you see red turgid vessels, red puncta, the nervous centre firm and its structure sound; from the corpora quadrigemina to the cauda equina, red turgid vessels wandering here and there along the nervous cords and filaments, and the serum effused very scanty. When in the advanced second stage the apoplexy is less decidedly sthenic, the internal plate of the skull is more deeply grooved; the turgid vessels are generally of a darker hue; the nervous centre is less firm, and red puncta fewer; the quantity of serum is pretty copious in the ventricles, and in the osseous cavities containing the cerebellum and spinal cord. If the respiration has been asthmatical, turgid vessels are crowded on the medulla oblongata, and extended along the nervous cords and filaments. The same appearances occupy the cervical portion of the spinal marrow with its nerves, if the superior extremities; and the lumbar portion with its nerves, if the inferior extremities, have been frequently or recently subjected to the arthritic domination.

When in the third stage the inner plate of the skull is very deeply grooved, the meningeal

vessels are turgid; the dura mater is partially thickened; strong adhesions are found between it and the arachnoid tunic, as also between this, the pia mater, and cerebral substance; serous effusion in great quantity on all the surfaces of the cerebrum and cerebellum, as also in the ventricles and cerebellic cavity. The superficial vessels are irregularly turgid; the vascular tubes are either flaccid and attenuated, or partially rigid and thickened, and frequently there is compression from coagulated or even fluid blood; the cerebral substance is bloodless, has been mollescent, and in many places degenerating. In the hemispheres there are small cavities or sacs filled with yellowish serum. Within the canal of the vertebræ, serum surrounds the dura mater, and within that covering the fluid is equally abundant; the bodies of the vertebræ are in their cancelli spongy, and of a deep purple colour; the venous sinuses are replete with dark blood, as are the vessels passing through the lateral foramina; and the envelopes of the cords of the nerves are coated with a bloody gelatinous effusion. The arteries of the spinal marrow, anterior and posterior, are salient, and from them a network of distended vessels surrounds the medullary elongation. This turgescence is always most conspicuous in the cervix and loins, but in the cervix it is seldom that the blood is not somewhat of a florrid redness, though elsewhere it is of a dark or venous complexion. Many of the nervous cords emanating from the spinal marrow, and even their individual filaments, are accompanied with turgid vessels; and what is worthy of attention, turgid vessels often attend their seeming roots to the very centre of the medullary substance; nor should we overlook the ossific depositions so often observed on the arachnoid coat.

The organs of motion, voluntary and involuntary, have lost their firmness; the viscera of the thorax and abdomen exhibit a great diversity of morbid change, though perhaps the heart, with the larger vessels, the liver, spleen, and kidneys, are most frequently perverted. Among the results detailed, it were not easy to select those that are to a certainty diagnostic. We have gained, however, this decisive point, that, whatever else may be sound or unsound, the spinal cord and its appurtenances are never, in any instance of gout, free from the well known effects of morbid action. It is not sufficiently understood, besides, that the centre of the nervous system is in every commotion, partial or general, the part most powerfully attacked; but hence it is, that gout has both morbid symptoms and anatomical characters in common with an almost infinite variety of disorders; and that of this centre there is one portion, viz. the medulla oblongata, upon which the continuance of life immediately depends; but wherever disease begins, hither it must come before the vital functions cease. Disturbance or failure in the organs served from the eighth, ninth, or accessory pair of nerves always introduces the fatal event, and

so far gout is related to all other mortal diseases.

Concluding remarks, &c.—We have now viewed this severe affliction of the opulent, the luxurious, and the great, under its phases in the living and in the dead; and though dissection has not followed every one of the cases, yet so closely are they allied in signs, in symptoms, and event, that we cannot doubt but they would all have manifested an equal correspondence in their anatomical relations.

But what is detected after death is not precisely the same in any two bodies. To arrive at any definite conclusion, therefore, we must distinguish between those morbid changes which are essential, and those merely incidental. It is only by proceeding thus, indeed, that anatomy can shed any clear light on the phenomena of disease. In this nice discrimination we shall never fail, I believe, of success, if guided by the following plain maxim. Things which may, or may not, co-exist, not being necessarily connected, are merely incidental, while those constantly together are exclusively to be received as essential. According to this rule, then, let us try what is essential in gout. There is no part that has not been observed in one sound, and in another unsound, except the centre of the nervous system. In it morbid change is constantly present, and the extension and danger of the disorder are in direct proportion to the extent and degree of this morbid change; the affections, therefore, of this centre are the essential.

Having come to this centre itself, we do not find that it is ever all equally affected. Often, on the contrary, the greater part of it is entire, indicating that the disease is primarily local. This locality varies with the organs attacked, and there is not one in our fabric which may not be the first to evince its influence. To determine, therefore, in any case, where, in respect of the nervous system, the seat of the complaint is, can be no difficulty to him who knows whence the suffering organ receives its nerves; but with every allowance for anomalies, we have proved, that the internal nismus generally tends to the evolution of the same symptoms in the same parts,—that is, to the production of perfect arthritis. Here, it is to be remembered, that in this the most common or regular form of gout, the lumbar and sacral nerves are the first disturbed, involving the inferior extremities, and often simultaneously the bladder and rectum; next the morbid action ascends, involving the kidneys, the liver, stomach, heart, respiratory apparatus, and encephalon, proving, that though all the parts of the nervous centre may be successively invaded, yet nature points to the inferior portion of the spinal marrow as that most liable; whence, the malignant operation once begun, if not removed, proceeds upwards, and the responding nerves vitiate the functions of the organs which they respectively supply.

Inferences.—All the facts combined seem to establish,

1. That gout has its primary seat in some part of the centre of the nervous system.
2. That in whatever part it commences, it gradually more or less produces morbid change throughout the whole.
3. That it most frequently commences in the inferior portion of the spinal marrow.
4. That, as it extends, the remote organs become disordered in their functions, and ultimately in their structure.
5. That, in fine, gout is primarily and essentially a disease of the centre of the nervous system.

From the London Medical and Physical Journal.

ON CERTAIN METHODS OF TREATING ACUTE AND CHRONIC INFLAMMATIONS OF THE EYE, *lately adopted at the Royal Westminster Ophthalmic Hospital.* By G. J. GUTHRIE, F.R.S. Professor of Anatomy and Surgery to the Royal College of Surgeons; Surgeon to the Westminster Hospital, and to the Royal Westminster Ophthalmic Hospital, &c. &c. &c.

To the Editors of the London Medical and Physical Journal.

GENTLEMEN,—In transmitting to you the accompanying cases, illustrative of certain methods of treating chronic inflammation of the eye, I do not intend to notice at present the various trials which have been made during the last eighteen months, in order to arrive at the mode of proceeding now adopted. It will be sufficient to say, that in no instance has any evil resulted from the remedies employed; whilst in most cases they have been eminently serviceable. The principle on which they have been used has been that of exciting an action greater, and of a different nature, to that already existing in the part, and therefore they must have been powerful in their effects. I have found them most manageable in the shape of ointments, and I gave the preference to the two following:

1. R. Argenti nitratis, gr. ij. ad. gr. x.; liq. plumbi subacet. gtt. xv.; ung. cetacei ʒj.
2. R. Hydr. oxymur. gr. iij. ad. iv.; liq. plumbi subacet. gtt. xv.; ung. cetacei ʒj.

The argentum nitratum, and oxymuriate of mercury, must be reduced first to an impalpable powder, then mixed with the ointment on a slab, and the liquor plumbi added. It may be done in a glass mortar. A double decomposition takes place in either ointment, which naturally diminishes the strength of each; but this change takes place slowly, particularly in the oxymuriate ointment, so that weeks elapse before they become inert. A very sensible difference is felt by the patient between an ointment only two days made, and another of two or three weeks' standing, and the stimulating qualities may be calculated according to the state of the eye, as well as the strength of the composition. The argentum nitratum ointment is gray when first made, but soon changes its colour to a brownish black. If the argentum nitratum be mixed with the ung.

cetacei (as I once used it,) without the liquor plumbi, it dissolves more rapidly; when used, the powdered nitrate falls into the fold of the conjunctiva, or rests on the lid, and is apt to cause a slough, which is prevented by adding the lead.

The manner of using either ointment is by introducing between the lids a portion, larger or smaller as the case may seem to require it, from the size of a large pin's head to that of a garden pea. The eyelids being closed, are to be rubbed gently with the finger, so as to diffuse the dissolving ointment over the whole surface of the conjunctiva: a part of it usually, however, works out by the motion of the lids, and should be wiped off (if the nitrate of silver) to prevent its staining the skin. Both ointments cause pain: in some persons it is considerable, in others less so, lasting from half an hour to an hour and a half; and, when the ointment is newly made, sometimes for four hours, and even until the next day. On the subsidence of the pain caused by the ointment, that which previously existed is found to be relieved, if not entirely removed; and, on the subsequent day, the patient usually acknowledges the benefit he has received with regard to all the symptoms. When the application has been severe, and the patient very irritable, a state resembling white chemosis occasionally takes place, and appears formidable to a person unacquainted with the effect of the remedy: it soon, however, subsides. The eye should be fomented with warm anodyne fomentations.

I rarely repeat the application until the third day; but the feelings of the patient are the best guide, the return of some of the old sensations indicating the necessity for its use, which should be, if possible, anticipated. In some cases of acute inflammation, two or three applications will arrest the progress of a serious disease, and effect a cure. In chronic cases, the ointment must be continued for a considerable time, and occasionally alternated with other remedies. Where they create a state of regularly increased irritation, as they sometimes will do, cupping, purgatives, &c. are of service; when the remedies may again be resorted to.*

In the various trials I have made with these applications, and others of a similar nature, I have generally used purgatives, sometimes mildly, sometimes severely; and very often serious complaints have been treated successfully without any internal medicine. In some cases they disagree altogether, but then it is when they have been called upon to do that which ought not to have been expected from

* It is curious to see the feelings manifested by different persons. Some, indeed, nearly all subjected to the use of these ointments at the Ophthalmic Hospital, asking to have them applied; others fearing the pain, but satisfied of the benefit received, and choosing their own days, and which eye, when both are affected.

them. I do not consider them as specifics for all diseases, but as remedies capable of doing an infinity of good under proper management.

I am, gentlemen, your obedient servant,

G. J. GUTHRIE.

P. S.—In the following cases I have suppressed the names of the different gentlemen whose care the patients had been under. It must, however, be understood they were all acquainted with, and professing a knowledge of, this branch of surgery. To those unacquainted with it, it may appear strange that persons who have been shown to be curable should remain so many years under the best care, both in and out of hospital, with so little amendment. Nothing is, however, more common; and that persons labouring under diseases of this nature should require from twelve to twenty months in the hospital before an approach to a cure is accomplished, the minutes of the Ophthalmic Committee of the House of Commons will abundantly testify. This fact will be a sufficient apology for the different trials which have been made, and for those which may yet be made, in order to discover better and speedier modes of cure.

Case 1.—Maria Courage, 127 Long Lane, Bermondsey, aged 15, has had her eyes bad for five years, so as scarcely to be able to see her way, and was frequently confined to the house for months together; was under the care of a gentleman professing a knowledge of diseases of the eye for about three years, going to him three times a week; was recommended by Mr. Furnival, of Westminster, to Mr. Guthrie, on the 9th of January, 1828, and has attended sometimes twice and sometimes once a week since that period.

On her first application, the conjunctiva of the palpebræ was thickened and granulated; that of the eyeball loaded with tortuous red vessels; the cornea very opaque, having red vessels running in it, and several small ulcers on various parts of it; the cicatrices of others which had healed were very obvious; great intolerance of light. The unguentum hydrargyri nitratis was applied the first day, and has been repeated whenever she attended, save once, when, from having caught a little cold, it was omitted. The only internal medicine she has taken during this period has been sena and salts about once a fortnight.

She found benefit from the first application, and at the end of the first month was greatly relieved. She considers herself to have been well the last two months, although she has continued to attend. At present the only appearances of derangement are several small spots, the cicatrices of ulcers on the cornea, which cannot be entirely removed.

Case 2, by the patient.—*A Sketch of the Cause and Progress of the Disease in my Eyes.*—The last week in April, 1822, I was sitting at work, a window being open over my head, a cold hazy day, the wind at north-east. (I mention this circumstance to explain that I have, since that period, invariably experienced

a relapse when the weather was similar.) Sitting as above described, I caught cold in my left eye, and had a sensation as if sand had been in it. In two days it became swollen and closed; the ball appeared a mass of blood. I was advised to apply to Mr. —: I waited on him accordingly. The fifth time of attendance, he told me I had lost my eye; he scarified the under lid, gave me a pill, and sent me home. By going to this institution I heard of you. I waited on you the next day: you pronounced it was an iritis, and remarked it was not so far gone but might be restored; by good fortune I made timely application to you. You ordered me to lose sixteen ounces of blood from the temple by cupping; to take two small pills every two hours, which caused a heavy salivation in two days, a sore mouth upwards of three weeks, which did away that great mischief, and saved my eye from total destruction.

In about five weeks after, the inflammation was communicated to the right eye, and ever since it has been the most troublesome and painful, always most susceptible of catching cold. The inflammation abated, and relapsed from time to time; the lids became granulated. I was rubbed with the sulphate of copper three times a week successively for two years, using various kinds of drops, repeated cupping and blistering, pills, &c. I was rubbed with alum and sulphate of copper occasionally for another year, which eventually cleared the eyelids, the sight gradually diminishing all the time. At length I could not see my way, nor discern any object distinctly, until the last five or six weeks, the stimulating ointment had the happy effect of clearing the apparently muddy fog that so long embarrassed my sight. I can now see every surrounding object quite distinctly.

P. J. WALSH.

April 30th, 1828.

I have all along observed the efficacy, or otherways, of the former applications.

P. J. Walsh was taken into the Westminster Hospital in December, 1827, and was discharged cured 30th April, 1828, during which time the ung. argenti nitratis was the only remedy made use of.

Case 3.—Thomas Walsh, admitted a patient at the Royal Westminster Ophthalmic Hospital, March 23d, 1828; says he has had bad eyes more than five years. Has been under the care of Mr. — three months, and subsequently under Mr. — nine months; when Mr. — said he need not attend him any longer, as he could do no more for him; that he might perhaps derive some benefit from an issue under each eye, but that he would not promise any great amendment. Walsh would not submit to the issues without the prospect of a cure, and left the institution in consequence. He then consulted several practitioners, was under some two, others three months, but found no relief. After this he applied to several quacks and advertisers, with as little effect. He then allowed two months

to pass over without doing any thing, when he heard of Mr. Guthrie, and applied here in consequence.

On his admittance, there was much chronic inflammation of the cornea and sclerotica, both irides irregularly contracted, the right cornea very opaque, and considerable tarsal inflammation.

Treatment.—March 22d.—R. hydrarg. submur. gr. iij. h. s.; magnes. sulph. ʒj. mane.—Applicr. ung. argent. nitrat. to both eyes.

25th.—Repr. pil. et M. S.—Repr. quoque unguent. arg. nitr.

April 1.—Repetantur omnia. 3d. Repr. 8th. Repr. 10th. Repr.

After the first application of the ointment, he was much relieved; continued improving till the 10th of April, when the inflammation was all but removed, and the opacity of the cornea fast disappearing. He has been using the ointment up to this period, at first regularly, and afterwards once a week or occasionally. There is now no appearance of inflammation or opacity, and the irides are nearly natural.

July 31, 1828.

Case 4.—John Wade, aged forty-five, suffered an attack of inflammation of the right eye in February, 1817, which shortly after extended to the left: for which he was bled, blistered, and physicked by several gentlemen until October, 1827, when he applied for assistance at the Royal Westminster Infirmary for Diseases of the Eye. He was then unable to see his way, and was obliged to be led; the conjunctiva lining the lids was very much thickened and granulated, the cornea opaque, the conjunctiva of the ball very vascular, discharge, both watery and puriform, considerable. He was directed to use the argentum nitratum ointment, which in a short time relieved the most urgent symptoms; but, having to attend from Chelsea, was exposed to the frequent changes of the weather during winter and spring, and suffered several attacks of acute inflammation.

On the 21st of June, 1828, he was admitted into the Westminster Hospital; was directed to be well purged, and to have the ung. argent. nitrat. applied every third or fourth day, as his own feelings dictated. Under this treatment he gradually improved.

On the 2d July, five grains of the pil. hydrarg. were ordered to be taken every night, and some house aperient medicine in the morning.

August 2d.—The mouth is slightly sore from the pills, which are to be discontinued. The eyes have regularly improved since his admission into the hospital, and without any deviation; the corneæ are cleaner; the thickening of the lids is nearly gone, although the conjunctivæ lining them are still villous.

This case has been selected because it remains under treatment.

Case 5, by the patient.—Pearson Smith applied in January, 1828, to Mr. Guthrie, having been six years suffering from sore eyes, for which he had sought relief in vain from many gentlemen; and was then so nearly blind as

not to be able to see a post. The black ointment was used, with almost instant relief, (the ung. argent. nitrat. :) attended regularly the first two months, afterwards at intervals, until April, when, thinking himself well, he went to work. Suffering a slight relapse in June, has again attended, and feels himself nearly well. Considers he owes his cure to the black ointment alone.

Case 6.—Ann Adnam, aged thirteen, has been unable to open or use her eyes until lately for the last twenty-two months, although she had been constantly under treatment at the Royal Westminster Ophthalmic Hospital for the first year. She was then put under the care of other persons; but, finding her eyes getting worse, she was re-admitted into the Ophthalmic Hospital, April 8th, 1828, and had the argent. nitrat. ointment applied, which has been continued twice a week ever since, with an occasional dose of calomel, with salts and senna. She can now open the eyes; the corneæ are much clearer, and she can see. She is very subject to relapses on the slightest cold, but there is now every appearance of her getting well. Until the ung. argent. nitrat. was applied, no other remedy seemed to be of the least use.

July 31, 1828.

Case 7.—Thomas Porter, aged eighteen, has been suffering from chronic inflammation of the eyes, more or less, for the last five years, and particularly for the last two, so as to be unable to work or get his bread; applied at the Ophthalmic Hospital, 24th July, 1828, in this state. The unguent. argent. nitrat. was used on the 24th, 26th, 29th, and August 2d; on which day he says, "he considers himself nearly well; the pain is entirely gone, and he can see a great deal clearer." The morbid vascularity of the eyes has disappeared, but the corneæ bear the cicatrices of several ulcers.

Case 8.—Acute Inflammation.—William Bacher, aged thirty-four, applied February 26th, 1828, with acute catarrhal inflammation, of three days' standing, in the right eye, and two in the left. It began with itching, followed by pain, as if something was in the eye, attended by a discharge of hot water, which prevents his sleeping, from the quantity which fills the eye, and forces him to open the lids with his fingers; cannot bear the light, and there is a difficulty in opening the eyelids, from the thick matter which in the night glues them together; pain in the head and over the eyes; the right suffused of a yellowish colour, and streaked with red vessels, arborescent, patchy with slight extravasation; some vessels running straight up to the cornea, others arborescing; streaks of mucus in the folds of the conjunctiva; edges of the lids slimy. Separating the lids relieves the uneasy sensations.—The ung. argenti nitratis, gr. xv. ad. ʒj. applied.—No internal treatment.

27th.—The pain from the ointment lasted until seven in the evening, (six hours;) discharged a good deal of water from the eyes in the night, but was much easier, as there was

very little matter after seven in the evening; they therefore stuck together but slightly, nothing in comparison with the night before. There is now the same intolerance of light; but little discharge of water; very little sandy feel, or pain, perhaps once an hour; eyes are not so red, but the redness is more in patches; headach better.—Apply warm water only.

28th.—Complaints all returned last night at twelve o'clock, and thinks himself as bad as ever: begs to have the ointment applied, which was done.

29th.—Is again better. Slept well last night; the eyes discharged water freely, but the lids did not adhere together; has little or no pain; bears the light better; conjunctivæ appear redder.—Apply the ointment gr. x. ad. 3j.

March 1st.—The ointment gave pain for three hours, but says he is much better, and slept well. No application.

2d.—Pain came on yesterday afternoon, although it did not prevent his sleeping well.—Apply the unguent.

3d.—Slept well last night. Free from pain, and has very little discharge; bears the light better; conjunctivæ red, but less so than hitherto, and more of a yellowish red. No application.

4th.—Right eye rather painful last night; left free from pain; both are better.—Repeat unguent. nitrat. argent.

5th.—Nearly well, and wishes to go to his work.

10th.—Not quite well, but is obliged to work, having a large family.—Repeat the unguent. nitrat. argent.

13th.—The ung. hydrargyri nitratis to the eyelids at night.

18th.—Unguent. argenti nitratis.

April 1st.—Has not attended since the 18th. There is some slight chronic inflammation of the lids remaining, but thinks nothing of it.

N. B. Has had eight in the family affected in a similar manner, and all cured by the same means.

From the *Lancet*.

EXPERIMENTS ON THE VELOCITY OF THE CIRCULATION. By M. HERING, of Stuttgart.

Haller and Sauvages were the first who tried to ascertain, by experiments, with what velocity the blood is carried through the vascular system; their calculations, however, were fallacious, as they were founded on the supposition, that the movement of the blood depended exclusively on the action of the heart. Haller's conclusions respecting the velocity of circulation in frogs, and small fishes, are more correct, as they were confirmed by autopsy; but his observations were confined to cold-blooded animals, and we need hardly mention how hazardous it would be to infer from them the velocity of the blood in warm-blooded animals. The same remark applies to the experiments of Spallanzani and Dollinger. In more recent works on the subject,

the comparison of the quantity of blood contained in the ventricles of the heart, with the whole mass of the blood, and with the number of pulsations in a certain time, was considered sufficient to determine the relative velocity of the blood; a method, the uncertainty of which clearly appears from the circumstance, that the quantity of blood cannot be made out with precision, and that the number of pulsations, and the capacity of the ventricles, differ very considerably in different individuals. (M. Hering found the capacity of the left ventricle in horses, differed from 3 to 11 ounces, and that of the right ventricle from 4 to 38 ounces.)

M. Hering tried another method, which seems to lead to a more accurate result. He mixed a solution of the hydrocyanate of potassium with the blood; he then took, at certain intervals, small quantities of blood from various parts of the body; and from the chemical examination of these different portions of blood, and from the comparison of the time which the substance required to arrive from one vessel into another, endeavoured to ascertain the relative velocity of the blood. The hydrocyanate of potassium seemed to answer best, as, even in a considerable quantity, it can be mixed with the blood, without causing any important derangement in the economy, and by chemical reagents, it is easily, and with great accuracy, detected in the fluid, and also in the solid animal parts.

The fluid was not injected, but by means of a small funnel, instilled into the vessel. The sulphate of iron was principally employed to discover the presence of the hydrocyanate of potassium; as, however, the blue colour of the precipitate, produced in this manner, does not form immediately, a few drops of hydrochloric acid were added, to accelerate the latter effect. By these means, one particle of hydrocyanate of potassium is detected in 20,000 particles of serum. In order to obtain the latter as pure as possible, the chemical examination was made some days after the blood was taken. The experiments were made on horses. A solution of two drachms of the hydrocyanate of potassium, in twenty-two drachms of distilled water, was instilled into one of the jugular veins, and at the intervals of a minute, sometimes only of ten seconds, a small quantity of blood was taken from other parts of the body. The instillation of the fluid had, in most cases, no injurious effect on the animal; it even had no influence on the pulse. In some instances, where the animal was killed immediately after the experiment, most of the fluid and solid parts were submitted to a chemical examination. We omit detailing the experiments, and give our readers only the conclusive remarks of M. Hering.

1. The time, within which the hydrocyanate of potassium, after having been mixed with the blood, passes from one of the jugular veins into the opposite, is from twenty to thirty seconds; from the jugular vein into the thoracica externa, it requires twenty-three to thirty seconds; into the saphena magna, twen-

ty seconds; into the arter. masseterica, fifteen to thirty seconds; into the arter. maxill. externa of the opposite side, from ten to twenty-five seconds; and into the arter. metatarsi, from twenty to forty seconds. It would seem that an increased frequency of the pulse is not accompanied by an increased velocity of the blood; for, in several experiments, where the pulse differed in a considerable degree, the velocity remained the same.

2. The hydrocyanate of potassium, within a very short time after the experiment, is excreted by the serous membranes, but in a small quantity. The time varies from two to eight minutes.

3. The mucous membranes excrete the hydrocyanate of potassium more slowly; that of the right half of the stomach surpasses, in this respect, that of the intestines, and the latter that of the respiratory organs. In the mucous membrane of the urinary and genital system, the excretion is slowest. On those parts of the mucous membranes, which are lined by an epithelium, as the eye, the mouth, œsophagus, and left half of the stomach, no trace of the hydrocyanate could be discovered.

4. In the kidneys, the excretion appears to take place with the greatest rapidity; in all experiments, within one minute after the instillation, the hydrocyanate of potassium was found in the cortical, sometimes also in the tubular substance, and, in a few instances, in the pelvis renum.

5. In the lungs, the hydrocyanate of potassium was found in very small quantity.

6. Only one minute is required to bring the substance from the jugular vein into the thoracic duct; in the lymphatic glands, it was not found in several experiments, although it appeared in considerable quantity in the ductus thoracicus. This apparently confirms the recent experiments concerning venous absorption, and makes it highly probable, that there is a direct communication between the lymphatic and arterial systems.

7. The foreign substance is, within a short time, eliminated from the blood; after twenty-four hours, no trace of it could be found even in the solid parts.—*Zeitschr. für Physiol.*

^f From the Edinburgh Medical and Surgical Journal.

THOUGHTS ON CONTAGION. By THOMAS MASTERMAN WINTERBOTTOM, M.D.

It has been the opinion of many judicious writers, that the ancients were totally unacquainted with the doctrine of contagion; and Dr. Adams,* speaking of their great dread of poisons, adds, "they were free from many of those apprehensions concerning contagion, which have detracted so much from the peaceable enjoyments of the moderns." This opinion, by no means modern, has been considerably extended by a very intelligent writer of the present day,† who attempts to prove,

that the doctrine of contagion does not reach further back than the year 1547,* the time of the removal of the Council of Trent to Bologna,—adding, that it was a farce enacted by Fracastorius and the Pope Pius III., who conjured up a malignant spirit to terrify into obedience a set of refractory people.† But that

Diseases. London, 1818; also Paskal Jos. Ferro, von der ansteckung der Epidem. Krankheiten.

* The present doctrine, however, of contagion and of quarantine is very clearly and briefly expressed by an Italian writer of a prior date to that stated by Dr. Maclean. It is there said, "Chi non hauera a çuersare con li infecti, fugga ogni conversatione perche cosi facendo sara molto piu sicuro non cognoscendo lo inimico ne potendose vedere; ma habbia opinione che ogni homo li sia inimico e ammorbato." "He who has no need to associate with the infected must avoid every approach to conversation, for doing thus he will be much more secure, not knowing or being able to see his enemy. Let him think every man his enemy, and diseased." Omodei speaks of this author as a celebrated writer named Baverio or Baviera, noticed by Beroaldo, "tamque Æsculapius colebatur, consulebaturque in medicina disciplina; cujus decreta oraculis veriora existimabantur." Omodei had not been able to obtain this work, but gives the title of it as printed at Bologna, in 1478. In a small work, with the perusal of which I was favoured by Professor Duncan, Junior, the title noticed by Omodei is prefixed to the head of the first page; "Regimento degno e utilissimo come l'homo si debbe gouernare e preservare nel tempo de la Peste,"—"a useful regimen for a man to observe, in order to protect himself during the time of plague." The title-page of the book is ¶ Tractato mirabile contro de la Pestilentia. Composto per il famosissimo et excellentissimo Doctore Maestro Bauera, nobile Bolognese; a satisfatione de li poueri homini. At the end it is said to be ¶ Impreso in Perugia nelle Case de Hieronymo de Carthulariis. Adi. 15, de Genaio, 1523, and is probably a reprint of the Bologna edition. The work consists of 28 pages in 12mo., and gives very precise rules during each day of the week, for regimen and diet, whilst the pestilence continues. His advice to the physician before he begins to visit his patients in the morning, deserves a place in the golden rules of Pythagoras, "purgare e procurare chel corpo suo sia netto si de peccati come de catiui humori,"—"to purge and strive to render his body free from sin as well as from bad humours." In a letter from Sir Thomas More to Erasmus, during the prevalence of the sweating sickness in England, he says, "minus periculi in aëre quam in urbe esse."

† Muratori is brief on this subject; he merely states that the fathers were discontented with Trent, on account of the tumults of the neighbouring wars, and the severe sickness which raged in the city. Paul III. does not deserve to be accused of duplicity in this af-

* Observations on Morbid Poisons.

† Maclean on Epidemic and Pestilential

the ancients did actually believe in the existence of contagion, and even entertained very nearly the same opinions which are now held, has been most satisfactorily proved by Dr. Marx in his very elaborate work on this subject.* The learned author, in support of the antiquity of the doctrine of contagion, has brought forward such a vast number of clear and decisive quotations from various writers of every class, as to render it doubtful whether most to admire his industry or his erudition. A single quotation from one of the oldest editions of the great Roman satyrist will show how accurate his notions were on this point:—

—————dedit hanc Contagio Labem:
Et dabit in plures; sicut Grex totus in Agris
Vnius Scabie cadit; et prurigine Porci:
Vnaq. conspectum Livorem ducit ab una.†

The commentary also, too long to be inserted here, proves that the effects of contagion were understood at that time. Eusebius,‡ who wrote 340 years after our Saviour, describing the terrible plague which raged at Alexandria, very clearly proves the dread entertained at that time of contagion. The Christians, he says, animated by religious faith, exposed their lives with cheerfulness in ministering to the sick, though fully aware *they were drawing the disease from those whom they approached to themselves.* *την νοσον ἐφ' εαυτους ελχοντες απο των πλησιον.* Upon the pagans the dread of contagion produced an opposite effect; terrified at the sight of death, they repulsed those who fell sick; they fled from their nearest and dearest friends, or cast

fair; he appears to have acted with sincerity; for as early as April 28, 1536, he proposed a council, which was repeated on the 29th of the succeeding May. The council was appointed to be held at Mantua, in May 1537; but when the time approached, many doubts and difficulties were raised by the Duke. At Lucca, in 1541, the council was proposed to be held at Trent, in November, but was delayed by the war; Renaldi, however, declares no place was fixed upon. The council was at length held at Trent, for the first time, December 15, 1545, though thinly attended. It finally terminated December 4th, 1563, in its 25th session. *Muratori Annali d'Italia*, Vol. xiv. p. 461.

We may suspect that something more than state policy decided this removal; for we are informed, that from June to November, 6000 persons died in Trent, after an illness of from two to seven days.—*Sprengel Gesch. d. arz-neik.* iii.

* *Origines Contagii*, 1824. Reprinted in 1827, "cum additamentis."

† *Iuuenalis cum tribus commentariis uidelicet Domitii Calderini Georgii Merulæ, nec no Georgii Vallæ.*—*Impressum Venetiis*, anno 1493, die xxii. Aprilis.

‡ *Eusebii Pamphili Ecclesiasticæ Historiæ*, libri x. Ed. Ern. Zimmermannus Francof. ad mænum, 1822.

their dying bodies into the public roads. The unburied bodies were regarded as dung, (*απεσχυβαλιζοντο*), and by every means they avoided communication with death, which, however, they could not escape, [*lib. vii. cap. xxii.*]

Two other Byzantine historians, Evagrius and Procopius, give the clearest proof that they understood the nature of contagion, while describing the universal plague which occurred during the reign of Justinian. Procopius describes the disease with so much accuracy, as to induce the learned Dr. Friend to suppose that he was a physician, or at least had studied medicine. He notices bubo, carbuncle, and petechiæ. It is probable that when he says in some the bubo putrefied, (*τουτοις δη ο τε βουβων εσφακελιζε*), he describes carbuncle. Petechiæ were always and speedily fatal, (*τισο τε φλυκταιναις μελαιναις, οσον φακον μεγαθος, εξηνθει το σωμα, οι ουδεμιαν επεδιων ημεραν, αλλ' ευθυωρι παντες εθνησκον.*) In some the body effloresced with dark-coloured spots of the size of a lentil. These did not survive a single day, but all died immediately.* Procopius is very anxious to prove the disease was not communicated by contagion, and uses the very same arguments which a modern non-contagionist would offer in support of his opinion. Evagrius, who suffered from the effects of the disease in his own family, decidedly refers it to contagion. His description of the disease is very brief, and though by no means to be compared with that of Procopius, from whom he has been supposed to borrow,† yet Dr. Marx, rather unjustly, and probably because he is a contagionist, thinks greater credit is due to Evagrius than to Procopius. We must, however, agree that the writings of these two authors fully establish the fact of the effects of contagion being fully understood by them both. Besides, we are so accustomed to contradictory opinions in medicine, that we feel no surprise in finding two contemporary writers differ so materially in opinion. In the late destructive epidemic at Groningen, two physicians, both highly talented, residing in the same town, and having equal opportunities of appealing to facts, (Professors Bakker and Thuessink,) have maintained opinions respecting the contagious nature of the disease diametrically opposite to each other.‡ In such cases we ought to apply the motto of the illustrious Haller, "*Fidem non abstulit Error.*" Two other writers nearer our own time, but still anterior to the council of Trent, deserve to be noticed. Saladinus Ferro Ascolanus, a writer of the fifteenth century, as we find expressed at the end of his work, gives strong evidence of his ac-

* *De Bello Persico*, L. ii. c. xxii. and xxiii. p. 141, et. seq. Ed. Maltreti.

† *Theodoriti et Evagrii scholastici Hist. Ecclesiast.* l. iv. c. xxix. Ed. Gul. Reading.

‡ *Beschreibung d. epid. Krankheit zu Groningen im. J. 1826.*

quaintance with the effects of contagion.* The other work, the oldest in the Italian language on plague, is that of Soldi, a Florentine author.†

The dread of contagion gave occasion to the celebrated Decamerone, in which Boccaccio describes the plague at Florence in 1348. Though he is supposed not to have been present, yet he describes the symptoms very accurately, and clearly points out the contagious nature of the disease. He compares the effects of the contagion upon the human body to that of fire applied to dry and greasy substances. Physicians and medicines, he continues, were of no use; the only remedy available was, "*di schivare e di fuggire gli infermi e le lor cose*,"—to avoid and fly from the sick and their goods. Petrarch speaks of the plague of 1348, which deprived him of Laura,‡ and which was so destructive in its course, that historians asserted that the destroying angel in the time of Noah had not occasioned such desolation.§ The danger of attending upon the sick was so imminent, that the Pope gave absolution to all who undertook that office.|| Giovanni Villani¶ refers the introduction of this same plague into Genoa to some of

their galleys returning to port filled with sick, who almost all died, and corrupted the air so much, that whoever approached them immediately sickened and died.* The elegant historian of Italy, Guicciardini,† who died in 1540, notices the dreadful pestilence which, as the usual accompaniment of famine, showed itself at the siege of Naples in 1528. He says, "*aggiugnevansi l'essere cominciata in Napoli la peste, contagiosa molto dove sono soldati Tedeschi, perchè non si astengono da conversare con gl'infetti, nè da maneggiare le cose loro*,"—"the plague had begun in Naples, extremely contagious where there are German soldiers, because they do not abstain from conversing with the infected, or from handling their goods." In 1533, during the plague at Paris, infected houses were marked with a red cross, and persons coming thence carried a white wand,—a sufficient proof of the danger of contagion being known and guarded against. Dr. Granville (p. 33) quotes an author on contagion who wrote in 1534. In the work of Ploucquet is inserted, *Le Conte, ergo absque preparatione nellum contagium*. Paris 1539: about eight years before the removal of the council of Trent to Bologna. The plague which devastated Naples in 1656 nearly reduced it to the state of a cemetery, and infinitely surpassed that which occurred during the war of Lautretch. In the latter, during the two years of its continuance not more than 60,000 persons were carried off; but in the former plague, 400,000 of the inhabitants died in six months. Having been sanctioned by the Pope, contagion was at this period almost universally acknowledged; and Giannone‡ refers it of course to contagion imported from Sardinia by soldiers. He marks its introduction and progress as clearly as if fully acquainted with the tenets of the present time; "*Attacatosi il malore nelle vicine case, si vide in brevissimo tempo sparsa la contagione ne quartieri inferiori della città, e particolarmente nel lavinaro, mercato, porta della calce ed armieri*."

Contagionists have universally agreed in referring the origin of plague to the East, but in which part it is endemial they have not yet decided. In Egypt they refer it to Constantinople, or at least to some part of Turkey; and there they probably return the compliment. It is amusing to remark how anxious men are to remove the odium of sickness from their own dwellings, and attach it to their neighbours. I have heard in Africa persons very gravely asserting the comparative healthiness of their own situation, and declaring

* *Scritto da me Saladino Ferro, Ascolano, Professor delle arti liberali, dottore di medicina, l'anno 1448, pp. 145, 149, 172, 175*,—a work usually attached to that of Gratiolo di Salo, *Discorso di Peste Vinegia* 1576. Di Salo says, "Alcuni chiamarano cotal peste anguinaglia," some called this plague anguinaglia (bubonic,) from the swellings in the thighs. Boccaccio describes the bubos as "o nell'anguinaia, o sotto le ditelle certe infature," as certain swellings in the groin or under the armpits, called by the vulgar *Gavoccioli*.

Even a modern physician of much experience, Dr. L. Frank, in giving his prognosis in plague, observes, "*omnis peste adfectus omnino pro perditio haberi potest*," p. 73.

† Jacobi Soldi, Florentini; viri religiosi ordinis Divæ Mariæ servæ sacre theologiæ Bachalarii eruditi opus insigne de Peste, &c. Impressum Bononiæ, &c. &c. Anno salutis 1478. By mistake, Ascolano is placed by Sprengel in the fourteenth, instead of the fifteenth century. *Gesch. d. A. K.* ii. 405. Ascolano is not noticed in Haller's *Bib. Med.*

‡ "*Or qual fusse il dolor qui non si stima*;" *Trionfo della morte*.

§ The suddenness with which plague is said to prove fatal is the chief cause of the terror attached to it. But Samoilowitz denies the suddenness of death in this disease. He examined the bodies of several who had been said to drop down suddenly, but found they had all been ill ten, twelve, or fifteen days.—p. 35.

|| Kurt Sprengel *pragmat. Geschichte der Arzneikunde*, ii. 484, a most learned and amusing work.

¶ *Viaggi di Francisco Petrarca*, dal Prof. Ambr. Levati, Milano, 1820.

* Ghilini *Annali d'Alessandria* observes, that in July 1500, a committee of four persons was chosen from the general council, to consider upon the best means of guarding against the introduction of an epidemic, which raged at that time in Germany.

† *Istoria d'Italia* lib. xix.

‡ *Istoria civile del Regno di Napoli*, lib. xxxvii. c. 7.

that every other part of the coast was unhealthy, and even dangerous. Dr. Frank is very strenuous in maintaining the general salubrity of Egypt, and in declaring that plague is always an imported disease. Dr. Wolmar cherishes the same opinions, and fixes the charge of poisoning Egypt upon Constantinople, where plague, he asserts, is endemial. Formerly the plague occurred but seldom in Egypt, perhaps only once in five or six years, and on one occasion not till after an interval of ten years. The more frequent occurrence of plague in that country at present is very plausibly accounted for by Dr. Wolmar. He remarks, that within the last forty years, the trade has been carried on by Turks dwelling in Scanderoon, Damietta, Rosetta, and Kairo; whilst formerly, the trade from Constantinople, Smyrna, Aleppo, Damascus, and Syria, was wholly in the hands of Europeans domiciliated in Egypt, and Greek or Damascus merchants, from whom the Turkish merchants in Egypt received their goods. By degrees the Turks built ships, and went themselves annually to the above mentioned cities, so that at the present time the whole trade is in their own hands, and they supply Egypt with the products of the East, as well as of Europe. Whilst Europeans held the trade, they collected their different wares from the various cities, only at those times when they were free from plague; and therefore they imported them into Alexandria, Damietta, &c. free from contagion. On the contrary, the Turks, who disregarded every precaution, made their purchases even whilst the plague was raging, and when the merchants, shut up in quarantine, were willing to part with their goods at an inferior price to what they would ask during the time of health.

If by boldly denying the existence of contagion we would prove it to be a mere delusion, an infinite blessing would be conferred upon mankind; but to do so we must shut our eyes to facts too stubborn to yield. As well might we desire a man to thrust his naked arm into the fire and assure him he will not be burnt. Scarlatina, and sporadic typhus, which all persons have witnessed, afford too many melancholy instances of victims to contagion. Yet I think the non-contagionists have done much good; they have brought forward many negative proofs in favour of their doctrine, which all tend to show the danger of being infected to be greatly less than was formerly apprehended; and should we again be affected with that dreadful scourge, the plague, which, in all human probability, there is not much cause to dread, I trust we should not again witness those disgraceful scenes which have occurred, of medical men deserting their posts in the hour of public danger, a crime equal to that of a soldier who abandons his colours in the day of battle.

By contagion we understand a substance of an animal nature too delicate to be perceived by our senses, but capable of exciting in an organized structure certain actions by which the matter inserted is reproduced; and when

a disease is capable of being transferred from one individual to another, modified indeed by circumstances, we say it is contagious or infectious. When its prevalence is unusually increased in any place it is said to be epidemic; and when a febrile disease proves rapidly fatal, and at the same time the deaths exceed the number of recoveries, it has been usual to term it plague or pestilence. Battista Susio, a Hippocratic physician, and a man of learning, impugns this opinion in his work, to prove that Mantua was not affected with pestilence in 1575. He says, during September and October, a few persons died who had tumours resembling carbuncles, amounting in forty-five days to only fifteen persons, but, as they died before the seventh day, it was judged to be the plague. In consequence a quarantine was instituted, and about a dozen persons were confined to a mill. As might be expected several sickened and two died, one a woman in childbed, from improper treatment. Here the populace, who held a different opinion, insulted the doctors for not calling the disease plague. "They called us," says he, "infected, carbuncled, bubo-ed, pestified fellows; '*Ci predicavano per ammorbati, per incarbonati, per imbubonati, et per appestati*,'" professional epithets not easily anglicised. A contagious disease usually produces the same train of symptoms in similar organs. The exanthemata affect the skin; catarrh the mucous membranes; and typhus the sensorium. When it does not excite the same train of symptoms in structures similarly organized, it is not contagion, but merely an animal poison. In support of their doctrine, the non-contagionists adduce numerous instances of exposure to contagion with perfect impunity, and we must allow to these negative proofs their due importance. So far as they go, they are extremely valuable, and tend to prove that the danger of infection has been greatly overrated. But when it is objected that we cannot produce contagion in a material form, it is an unfair mode of reasoning, from various matters, too delicate to be observed, when received into the system, produce very remarkable effects. Acrid substances taken into the stomach often affect distant parts; the cruciform and alliaceous plants affect the milk of cows; garlic affects the skin; oil of turpentine and asparagus the urine. Nations living upon fish have a peculiar smell; and a vegetable diet gives an acid perspiration. In like manner the matter of a small-pox pustule, or of a yaw pustule, introduced into subjects susceptible of their action, produces its peculiar disease, though the matter introduced does not appear to differ from the pus of a common abscess; and the saliva of a rabid animal seems not to differ from that of an animal in health. In these instances the pus and saliva are probably merely vehicles in which the contagion is involved. How ex-

* Del conoscere la Pestilenza, p. 57. In Mantova, 1576.

tremely minute the quantity of contagious matter may be we see in inoculated small-pox and in yaws. A common fly, *musca lepræ*, coming from a yaw sore, and alighting upon a skin very slightly scratched, will produce that loathsome disease; and the *fœtus in utero* has been affected with small-pox, though the mother had not the disease at the time, but passed through it years before.

Contagion has been compared to a germ planted in a proper soil, which always produces a plant *sui generis*;* and here, too, it may be remarked, how small a proportion the vital or vegetative part often bears to the substance which involves or protects it. Pursuing the same reasoning we may observe, that, as plants degenerate by being repeatedly sown in the same soil, so in like manner contagions lose much of their violence when they have been long introduced into a country, and seem to resume their activity when transplanted into a different region, and associated with different subjects. How contagion is produced we know not; but it appears to be always a product of animal life,—a consequence of febrile action; so much so indeed, that fever seems to be essential to its production. This opinion is strengthened by a remark of Pugnet,† a strong contagionist, that plague ceases to be infectious as soon as the fever subsides, in whatever state the buboes or carbuncles may be. Owing to this cause he thinks it is that the non-contagionists have been induced to assert, that plague is not so contagious as is commonly supposed, or even that it is totally devoid of contagion. He informs us also that the charpie prepared by the convalescent pest patients was used for the wounded, without ever occasioning any bad effects. He further remarks, that it was satisfactorily established that no instance could be produced of plague arising from an old pest sore after the cessation of fever. Schraud also remarks, that the wounds or sores of plague patients, probably when the fever had ceased, were closely examined by short-sighted people without ill effects. Contagion may always be produced under certain circumstances, when that peculiar action of the blood-vessels exists which occurs in fever.

Professor Hufeland‡ considers contagion to be a process of *hyperanimalization*, produced by the crowding together of men or animals. This poison, (*zootoxicon*) he adds, the product of an animal gas, generated in the skin and lungs, is a kind of animal distillation; a product of the vital process, bearing a strong analogy to the narcotic principle, and very probably somewhat similar to the prussic acid. That a body in sickness should produce a something poisonous to a healthy person, is not so strange

as that the skin of a healthy man occasionally proves poisonous to a healthy wound in another. I once remarked to an intelligent surgeon how frequently inflammation appeared in the arms of those he bled, and hinted that the lancet could not be clean. He replied that the same idea had occurred to him, and in consequence he had always made a point of using new lancets, but still with the same effect. He therefore suspected it to arise from placing his thumb over the puncture before the arm was bandaged; and by avoiding this in future, he met with no more cases of inflammation. Dr. Adams notices the same circumstance.—“When,” says he, “the custom of putting the thumb over the orifice after bleeding was more general, this kind of ulceration, *ulcus exedens* of Celsus, or *festering* as it is called, was much more common.”* We have many instances of death produced by even a slight scratch received during the dissection of a body recently dead; for if delayed beyond twenty-four or thirty hours after death, or until some appearance of decomposition shows itself, no injury can ensue. It seems not to be improbable that many morbid secretions, or at least such as are the product of a general disease, retain so much of the vital power which produced them as to be capable of communicating a similar disposition to other organic structures.†

Our inability‡ to detect a corrupted or vitiated state of the atmosphere may not depend so much upon the imperfection of our instruments, which almost universally give the same results, as upon some powerful antagonizing power which preserves the uniformity of the atmospheric mixture; for we must suppose the mixture we breathe to be that which is best adapted for the support of animal life. Light is probably the chief agent in preserving this uniform state of mixture. It may be owing, perhaps, to the greater intensity of light that the fevers of tropical climates are so much less contagious than those of colder regions. Shooting parties pass through swamps under a bright sun with impunity, which before sunrise or after sunset would produce sickness or death. During the yellow fever at Barcelona, it was observed that people might during the day follow their occupations with safety, but to pass a single night in a sick-house was sufficient to be infected. Thuessink likewise remarks from his own experience, that contagion acted most powerfully at night. The healthiest and strongest men, he adds, who watched the sick but for a single night, were severely at-

* Richter.

† Pugnet, Mem. sur les Fievres du Levant, p. 132.

‡ Atmosphar. Krankheiten u Atmosphar. Ansteckung. A work small in bulk, but pregnant with most important matter.

* Adams on Morb. Poisons.

† Brandis Pathologie, 127.

‡ Contagia sunt succi animales blandi, omni acri et caustica natura destituti, qui impune devorantur, nec ad chemicas leges sed specifica quadam ignota vi nocent viresque corporis vitales immutant. Reil. Mem. Clin. fasc. iv. p. 125. Ueber die Erkenntniss und cur der fieber, I. p. 91.

tacked within the space of eight days, p. 59. Those who cross the Pontine marshes know that the marsh miasma, or *aria cattiva*, is chiefly hurtful during the absence of the sun. The Psalmist seems to increase the terrors of pestilence by describing it as *walking in darkness*. During the rainy season at Sierra Leone, a few days of bright sunshine invariably improved the state of the sick. It is the want of light, implying also dampness and want of ventilation, that renders the dwellings of the poor such receptacles of contagion. Some very curious experiments have been made by pouring out considerable quantities of different gases into a room, which in a very short time were absorbed or decomposed so as not to be detected. Would the same effect be produced in a room totally dark? In the *Recherches Hist. Chim. et Medicales sur l'air marecageux*, Paris, 1823, by Professor Julia, are contained some interesting observations on this subject.

The enigma respecting contagion has by some been attempted to be solved by comparing it to a disoxydizing or azotifying power;* to the effects of *Rhus toxicodendron*;† and to many narcotic poisons. Others have considered hydrogen‡ as an active ingredient in it,§ but in that case we might expect miners, who are exposed almost daily to its influence, would be more liable to contagious diseases than other classes of labourers. Others again have contented themselves with referring contagion to a peculiar state or con-

stitution of the atmosphere,—a conjecture which has indeed a plausible appearance, but which by no means explains either the nature of contagion or the cause of contagious diseases. We cannot by any known means point out the difference between a pure state of atmosphere, and that which we suppose to be vitiated in a crowded hospital. We only know the sensible qualities of the air, its heat, moisture, and density. The various substances which may float in the air unperceived by our senses are quite unknown to us, yet every odorous body with an almost imperceptible loss of substance, fills the atmosphere to a considerable extent around with particles capable of powerfully affecting the organ of smell. In short, we know only the grosser composition, and that perhaps very imperfectly, of the air we breathe.

Some authors, indulging their speculations on this subject, and referring contagion to an atmospheric origin, have supposed an animated principle to be superadded, though too minute for our senses to detect; and this idea has given origin to the animalcular system,*—a doctrine espoused particularly by Kircher, but afterwards maintained by Linnæus.† The microscope shows us in a drop of water a world of animated beings; and since the whole of nature teems with life, the air also may contain a descending series of animals as much more minute than those in water, as that element is more dense than air. Professor Hufeland,‡ in his extremely interesting work on this subject, inclines towards the same opinion, and thinks we must assume a *pathogenia animata* to account for epidemic and contagious diseases. The term atmospheric disease, he thinks, is justified by the analogy observable between its appearances and that of an individual. In each we remark a certain course, a trifling commencement, a gradual increase, both in intensity and extent; a period of vigour or *acmé* when the disease is most general, and always most dangerous; then a decrease, and at length a total extinction; or, in other words, we may perceive periods of evolution, efflorescence, declension, and death. The operation of this germ of atmospheric disease, aerial infection, or epidemic, may be twofold. Either the contagion remains atmospheric, and does not spread from one individual to another, the reproductive power dying during the first propagation, and thus constituting a simple, pure epidemic: or it increases to such a degree in the individual as to evolve a contagion which may be transferred from one to another immediately, or by means of conductors, capable of exciting in other individuals the same dis-

* Brandis gives some curious remarks on the effects of azote. *Pathologie*, 130.

† Conradi. *Handbuch der allg. pathologie*, page 209.

‡ Hydrogen is found in most of the animal and vegetable poisons, which, from their narcotic powers, bear an analogy to contagious matters; such as the poison of the serpent kind, the tarantula and scorpion, of bees, of narcotic plants, and the poisonous exhalation of the *Rhus toxicodendron*, which, according to Van Mons, consists of carburetted hydrogen. But these gases, when they do not extinguish life, produce effects very different from contagion. The air of marshes has been found to contain carbonic acid gas and carburetted hydrogen, but we cannot, by any mixture of these gases, produce an intermittent; and the activity of vaccine matter is destroyed by exposure to hydrogen or azote. Bernhardt, p. 30.

§ Schnurrer, 114.

Dr. Grohmann, (ueber die im Jahr 1813, h. pest zu Bucharest,) a contagionist, asserts that even the confined air of a pest hospital is not impregnated with contagion of plague, (Peststoff,) and that the physician runs less risk there than in hospitals with nervous and camp fevers, provided he avoids touching the patient or his clothes, *excepting, however, the necessary feeling of the pulse*, p. 9. Berends Vorlesungen, ii. 176, Jäger de atmosphæra et aere atmosphærico, 1816.

* "Contagiones vera sunt atmosphære animalia;" Wallenberg de Rythmi in morbis epiphania, 253.

† Linnæus, *Amœnitates Academicæ*, V. 5, p. 92. *Exanthemata viva*.

‡ Hufeland, *Atmosphærische Krankheiten u. Atmosph. Ansteck.*

ease.* This forms *contagion* or *contagious epidemic*, and in this Professor Hufeland thinks lies the distinction between an epidemic and a contagion, which may also solve the dispute so often arising, especially in the instance of yellow fever, respecting the epidemic or contagious nature of a disease. Experience affords us many proofs of both instances, for the same epidemic may be at the same time contagious and not contagious; and there may occur, in the former case, at the same moment, patients who have received the disease without contagion, merely through atmospheric influence, and others who have evidently taken it by means of individual con-

* Hufeland's division of contagion into *C. vivum*, animal contagion, and *C. mortuum*, marsh miasma, or *malaria*, is sufficiently comprehensive; the former exciting fevers of a continued, the latter of an intermittent type. In the early state of society, it seems probable that fevers must have occurred, and that they originated rather from the soil than from a crowded multitude. The exciting cause of fever from telluric influence possessing little or no vitality, it could not produce the peculiar action requisite for its own reproduction; its activity, therefore, was speedily extinguished. The want of that active principle in marsh effluvium which belongs to animal contagion, prevents its adhering to inorganic matters so as to produce fomites. It seems, therefore, not irrational to suppose, that the intermittent was the original form of fever. Climate and other causes occasioned those reduplications of paroxysms which produce the remittent form, and improper treatment would contribute its share to render the paroxysms more and more obscure. Many excellent physicians have suspected even intermittents to be contagious, and among others my late friend, Dr. Clark of Newcastle, a physician of great experience, and one who paid much attention to the subject of fever, which he considered as a simple form of disease. Thuesink also in his description of the fatal fever which raged at Groeningen in 1826, decidedly maintains its contagious nature. "I have often observed," he says, "the simple intermittent to be infectious, and spread from one person in the same house to another; as is also believed by Hecker, Von Hoven, and Horn." The same opinion is also held by his translator, Dr. Gittermann. It remains, however, for future observers to determine this obscure point. An expression in the Septuagint, *ανεμοφθορια*, has been referred by commentators (Schleusner, &c.) to a depraved or corrupt state of the atmosphere, but being joined to *Ιαγερως*, it seems more probably to mean *contagium mortuum* or *malaria*. The word *Πυρωσις* also, joined to *Ιαγερως*, appears to corroborate this opinion. The passages are Chron. ii. c. 6, v. 28, *ανεμοφθορια και Ιαγερως*, and Amos, c. iv. v. 9, *επαυξα νμας εν πυρωσει, και εν Ιαγερω*.

tagion. Instances may occur at certain places and particular periods, where the same disease, yellow fever for example, prevails only epidemically, and others where it is very contagious, according as the disease in an individual has acquired the degree of intensity requisite for the production of contagion. In epidemic catarrh likewise we see many affected from epidemic influence alone, while others receive it from the contagion of those atmospherically affected. In scarlatina also, the first patients are usually affected by epidemic atmospheric influence; but afterwards the disease spreads from those individuals in whom it has acquired a certain intensity to others who are disposed to receive it. Hence we find, in this instance, as well as in that of the yellow fever of Spain and America, physicians who consider the disease merely as epidemic, and others as contagious; a very natural conclusion, for both cases occur, and both parties are right. Professor Dzondi, in a very important little work,* gives many original ideas upon this obscure subject. He considers contagion to be a matter endowed with a vital principle; the product of inflammation in organized bodies, and capable of reproduction, in contradistinction to miasma, which is produced by the decomposition of organized substances in the air, but is incapable of reproduction. His comparative view of contagion and the seeds of plants (p. 28) is ingenious and illustrative.

The Italian physicians have flattered themselves with being able to produce the matter of contagion in a tangible form. Moscati, by suspending globes of glass filled with ice in the crowded apartments of an hospital, where the air was supposed to be infected, found a kind of viscid substance adhering to the outside of the vessels,† occasioned by the vapour which arose from the patients being condensed by the cold. Professor Hartmann‡ further remarks, that these experiments made in the Italian hospitals prove that the basis of the infectious breath is a watery vapour, containing a very diluted animal mucus, to which the contagious matter adheres, "or rather the power of infecting, for this mucus is itself the matter of contagion." P. 76. These experiments, however specious in appearance, are very far from being satisfactory. No instance is given of this viscid animal matter being capable of producing typhus; and it is very probable that a similar product would be obtained by repeating the experiment in an apartment crowded with people in the most perfect health. The idea of contagion being a viscid substance appears to have gained some degree of currency; for Dr. Clark,§ speaking of the hospital at Padua,

* *Ueber Contagien, Miasmen, und Gifte. Leipsig, 1822.*

† *Dr. Granville's Letter on Plague and Contagion, p. 16.*

‡ *Die Theorie d. ansteck. Typhus.*

§ *Medical Notes on Climate, &c.*

where the windows of one ward are only about sixteen feet above the surface of the sluggish Brenta which flows beneath, adds, if they be carelessly left open till too late an hour, the patients are subject to be attacked by intermittents of a pernicious kind. "Moreover," he continues, "if the observations of Dr. Ragaud are correct, gauze frames fitted to these windows, while they admitted the air, would arrest the progress of the miasmata. This precaution might be useful in all cases where windows are exposed directly to the air of marshes."* P. 82.

To prove that contagion is not propagated by excrementitious matters, many nauseous and disgusting experiments have been tried by medical men upon themselves. But as these filthy potations are not absolutely conclusive of the fact, it seems rather a kindness to suppress the names of the experimentalists. A cannibal is a more delicate animal. Besides, we know that attempts have in vain been made to inoculate small-pox with blood, saliva, and perhaps by many of the excretions. Dogs eat with impunity various diseased parts, but the plague has been produced even in them by injecting bile and urine into the blood-vessels. A Monsieur le Blanc is quoted by Professor Thuessink as having frequently seen wounded men in hospitals placed in the beds whilst still warm, (see Hodge's *Loimologia*, p. 27,) and fouled with the vomiting and excrement of patients just dead of yellow fever. Though productive of no bad effects, the learned Professor very justly reprobates such conduct, as doing no credit to the hospital. Medical men may perhaps claim the privilege of being filthy themselves, but they have no right to tamper with the comfort and delicacy of their patients.

Hoffmann refers the cause of plague to putrefaction,—an opinion held by Galen respecting pestilential diseases, and first impugned by Fracastorius in his dispute with Monte, Professor at Padua. Even so acute an observer as Assalini speaks of the putrid blood and ichor of a bubo thrown upon his hand.

* In our translation of the Sacred Writings, the word *cleave* is used to mark the attack of plague. "The Lord shall make the pestilence cleave unto thee." Deut. c. xxviii. v. 21; but in the Septuagint the expression is still stronger, Προσκολλησαι (shall glue) Κυριος εις σε τον θανατον,—here, as in many other parts, θανατος is synonymous with λοιμος. Luther, in his elegant and nervous version of the Scriptures, instead of pestilence, which is too indefinite, uses *bubo*;—very characteristically expressed by Sterbe-Drüse, gland of death. In the same chapter, v. 27, "Botch of Egypt," (ελκει Αιγυπτω) by many commentators referred to lepra, is more justly referred by Luther to plague, and translated Drüsen Egypti, glands of Egypt. The same term is used in the reformed translation. (Reformirtes Uebersetzung.)

But Chenot compares the contents of a pestilential bubo to that of a common abscess. "*Bubo vel natura vel arte maturus, postquam incisus est, pus album crassum, læve, æquabile effluit.*" Neither do bodies dead from plague putrefy sooner than from other diseases, although the nerves and muscles are said to be remarkably soft.* And Pugnoy says the bodies are "*a' une mollesse et d'une flaccidité remarquable, flasques et flexibles.*"†

Innumerable instances might be quoted to prove that putrefaction does not produce epidemic diseases, or even contagion, nor apparently increase their virulence. Dr. Wittmann informs us that in Turkey the cemeteries are extremely offensive in hot weather, the bodies when interred being scarcely covered with earth; yet no instances are given of bad effects arising from the putrefaction. He adds, "Ibrahim Pacha was positively encamped on the burial-ground of El Arish, where the bodies of several thousand persons who had fallen victims to that disease, plague, during the last six weeks, were interred; and his own tent covered a part of the graves;"—a pretty strong proof of the innoxiousness of the exhalations, for no notice is taken of any bad effects having occurred from the site of the encampment. In the plague of Moscow‡ upwards of a thousand bodies, which had been concealed during the epidemic under the floors and behind the wainscot or walls of houses, in order to prevent the survivors being subjected to the horrors of quarantine, were removed and buried in churchyards, without a single instance occurring of further infection. This fact is sufficiently known from De Mertens and Orræus; but the following account of exhumations in Professor Schraud's *Geschichte der Pest in Sirmien*, is still more in point, and contains much information and many curious circumstances not generally known in this country. Here, as at Moscow, bodies had been buried or concealed rather in improper places, in order that the survivors might escape the much dreaded quarantine, or being cooped up in those dreadful receptacles of misery, pest-houses, as they are appropriately named. In removing these bodies every precaution was used to avert the danger of infection. Iron tongs were used to lay hold of them, and hooks to pull off the clothes. At first only those persons were employed in this duty who had experienced the plague, under an idea that they were less liable to be re-infected; but not being in sufficient number, others were taken who had neither suffered from plague themselves, nor attended upon plague patients. These people were recommended to dip their shirts in vinegar;

* Bach Grundzuge, z. e. Pathologie, p. 183.

† Memoires sur les fievres de mauv. caractere, p. 147, 167. Samoilowitz ueber die Pest, p. 99.

‡ De Mertens, *Observationes Medicæ de Peste*.

to fasten a sponge wet with vinegar before their noses; to wash their hands frequently with vinegar; and when at work, to sprinkle the corpses with it. At night they were ordered to use frictions with oil. But these regulations could only be enforced during the two first days; for afterwards the grave-diggers carried on the work with the utmost carelessness, trusting to an abundant supply of wine as the only preservative. In this manner 1334 bodies were disinterred and carried from various parts to the public burying-ground; and an employment, which at first appeared extremely dangerous, was completed without the smallest accident. They even raised from the graves, with their naked hands, portions of bodies separated by putrefaction. Children they bore in their arms to the hearses, merely drying their hands, fouled with putrid matter, upon the grass. Many searched the clothes of the dead, taking off the silver buttons and other ornaments; and decked their wives with the head-dresses of the deceased. One of these men, who had not had the plague, pulled a ring from the finger of a corpse and placed it upon his own. Although occupied three months in this business, none of these people were infected; but one who had never had the plague, and remained quite well during the raising of several dead bodies, was soon afterwards seized with plague when employed in purifying the pest-hospital at Krushedoll. The other grave-diggers remained healthy, and when the business was finished, they were dismissed after passing the proper quarantine or *contumatz*, as it was termed.* This immunity of grave-diggers is likewise noticed by Frank.† The results of

* The barbarous word *contumatz* used instead of the more expressive, *Gesundheits probe*, trial of health, is borrowed from the Italian *contumacia*, common quarantine; *star in contumacia* signifies being in quarantine, and also the crime of disobedience to the holy church, much more to be dreaded than quarantine itself. Dante. Purgatory makes the punishment thirty times the period of the refractory state. It is true that he who dies (excommunicated) in disobedience of holy church, must remain without this thirty times the period of his presumption.

Ver' è che quale in contumacia muore
Di santa chiesa, ancor ch'al fin si penta,
Star li convien da questa ripa in fuore
Per ogni tempo, ch'egli è stato, trenta,
In sua presunzion.—*Purgatorio*, c. iii. 136.

A quarantine of one hundred years on the banks of the Styx was inflicted on those whose bodies lay unburied.—Virg. *Æn.* vi. 327, *et seq.* from whom Dante has borrowed the idea.

† “Vespillones, qui peste mortuous sepe-
liunt, et ministros qui peste adfectis inserviunt,
vix unquam morbum contrahere;—In hoc
eodem Nosocomio vidi vespillones, qui vestes
ægrorum pridie ex peste mortuorum indue-

these exhumations, given by the medical men who superintended them, are interesting. Dr. Buday's report mentions, that the depth at which the bodies were buried was various; some were one or one and a-half fathoms deep, others were only covered by a foot of earth; but in general the depth was three or four feet. Many of the bodies were covered with a white mould, as if sprinkled with lime. The deeper the bodies were laid the less were they decayed. The same remark is made also by Orræus, who says, deep inhumations retarded putrefaction.* Bodies buried in a wet, marshy, or clayey soil, were but little corrupted, though they smelled so intolerably that the grave-diggers were often obliged to retreat for awhile. In cold shaded places, and under falls of water, they were least of all corrupted; and in one of these places a female long buried appeared as if only just interred. Bodies enclosed in coffins or in woollen clothes were less decayed than those without coffins or dressed in linen. Bodies buried upon eminences exposed to the sun, in a loose sandy soil, and not deeply covered, were generally so much decomposed, that only the skeleton remained, which could easily be raised by a single person. They were pressed quite flat, and emitted very little smell.

Dr. Steele reports, that bodies exposed to the free air putrefied sooner than those interred. Two bodies found unburied in a wood, father and son, who had fled thither after the death of the mother of the family, were so decayed that only the bones remained; but that of the woman, which had been buried five feet deep, though extremely putrid, was still tolerably entire. In the same grave were found bodies fully clothed, and others covered only with a shirt; the former were almost recognizable, but the latter were completely putrefied. Two bodies buried nine feet deep, and in water, though long in the ground, were but little decayed compared with such as were buried only half as deep and in a dry soil. Into one grave quicklime had been thrown, but it had merely covered the face of the corpse and formed a crust upon it, which required some force to separate; the face was

runt.” *De Peste Dys. et Ophthalmia Ægyptiaca*, pp. 62–3. Orræus gives nearly a similar account. “Sæpe Jassie miratus sum, a per-
multis cadaueribus, in plaustis accumulatis a
vespillonibus obuiam ductis, nullam mephiti-
dem naris feruisse.”—*Descript. Pestis quæ anno*
1770, *in Jassia*, *et* 1771, *in Moscua grassata*
est. These instances seem to show that con-
tagion is destroyed by death.

* Orræus notices with surprise the slowness with which bodies putrefied in the plague at Moscow, and notices the same occurrence during an epizootick in Prussia. “Cadauera boum ex lue enectorum sat profunde defossa, decem et plures annos incorrupta fere per-
maneant,” p. 163. It appears doubtful whe-
ther this may not rather be referred to the
depth of the grave.

quite unhurt and cognizable, but the other parts of the body, untouched by the lime, were much decayed. From the above facts we gather that bodies dead of plague soon lose the power of spreading contagion;* and that, contrary to popular prejudice, deep graves and quicklime do not so soon destroy bodies as shallow graves in a dry soil.†

Peculiar smells have been very generally connected and even identified with contagious diseases.‡ Lord Bacon compared the smell of plague contagion to that of mellow apples, or *May flowers*. The exanthemata have a peculiar smell, especially small-pox, though it may be produced merely by a morbid change in the secretions, and quite independent of contagion. *Pugnet* says the smell of patients in plague is insupportable; and Dr. Buday, cited by Schraud, asserts that the smell of plague was very perceptibly spread to some distance round the patient, and was so distinctly marked as often to guide him in his diagnosis.§ When going into the hospital about sunset, he says he often felt a pungent vapour affect his nose, exciting a desire to sneeze. It affected also the eyes of the gravedigger, one of whom entirely lost his sight. The excretions likewise partook of this peculiar smell; but probably a good deal of fancy may be here mixed with some truth. Brandis|| appears to run into the opposite extreme when speaking of the peculiar smells of contagious and epidemic disease. He asserts that they produce as little effect upon those who smell them as seeing the patient or hearing him speak. No one, he says, has, by smelling a patient, ever caught the itch, or dysentery, or miliary fever; but in answer to this assertion we may ask if the same can be said of small-pox.¶ Upon the present subject,

* Omodei remarks, "Il contagio è un prodotto della vita e non della morte." "Contagion is a product of life, not of death."

† It has been proposed, I believe, by Professor Oslander, to cover bodies dead of plague with charcoal, in order to correct the fœtor and destroy contagion, a precaution which is rendered quite unnecessary by the above facts. Besides, if charcoal converts the body, as is said, into a kind of adipocire, common burial must be preferable, as more favourable to the disorganization of the body.—Works by Shaw, iii. 168.

‡ Sprengel *Institutiones Medicæ*, Vol. ii. p. 68.

§ "Halitus ex ægrotis emanans interdum acre quid habuit, quod in adstantium ore fere sensum comesti piperis cieret; in progressu morbi mucidus ille potius, quam putridus odor sentiebatur, qui toties contagii comes est." Lohnes de Utilit. Hydrarg. in Typho. Tubing. 1814.

|| Pathologie o. Lehre v. d. Affekten des lebend. Organismus, p. 102.

¶ Bernhardt's Handbuch d. allg. u. besondern contagienlehre, p. 28.

Ritter,* in an excellent prize essay, makes some curious remarks. The want of ablution, he observes, occasions that insupportable and specific smell which the soldier, when in mass, spreads around him, and which differs in different nations. The smell of Hungarians and Croats differs from that of German soldiers; and an English regiment smells extremely different from a Spanish, Bohemian, or Dutch one. This specific smell of different classes of men may be attributed to their mode of life and employment, as well as to their domestic and national customs. He further asserts, that blindfold he could point out the particular trade of an artisan, or whether he was a Jew, a peasant, or a person living unemployed in extreme poverty; for indigence discovers itself by a peculiar nauseous smell, arising from the accumulation of animal vapours, which surround the body as it were with a halo. It may here be remarked, however, that Orreus and Chenot both assert there is no peculiar fœtor observable in plague. The peculiar smell of the breath in small-pox seems to indicate the lurking contagion; and neither in this, nor in any other cycloid disease, have we direct evidence that the emanations from the body are contagious, independent of those of the lungs. The smell of land is well known to mariners; marshes and mudbanks emit a faint, unpleasant smell, as if to warn us of danger. "*Les marais*," says a lively writer, "*peuvent être considérés comme les plaies infectes de la terre d'où s'élèvent, à de grandes distances, la langueur et la mort.*"†

In what manner contagion enters the human body has been a matter of considerable dispute. In consequence of nausea and vomiting occurring so frequently after the supposed attack, the stomach has been conceived to be the part primarily affected. But if, as appears most probable, contagion be a gaseous matter, it would not in that state easily force its way into the stomach. If, in a more solid form, there is reason to believe it would be acted upon by the stomach, and destroyed, as noticed by Plater, who says, "*cepa ad maturationem bubonis applicata sine noxa devorata.*" This is related of Jonas Justus, when a boy, so celebrated in the History of the Reformation.‡ Small-pox matter also, and the expectoration of consumptive persons, have been swallowed without harm, though all such poisons are extremely active when applied to organs where assimilation does not take place, or at least not very speedily. Thus in peculiar constitutions muscles, crabs, &c. produce very violent effects when not quickly acted upon by the stomach, but they afford a mild nourishment when the organization has suffi-

* Abhandlung von den ursachen ansteckender Krankheiten. Leipzig, 1819.

† "Marshes may be considered as the infectious sores of the earth, from whence arise languor and death."—*Julia, Recherches sur l'Air Marécageux*, p. 6.

‡ Schnurrer *Materialien*, &c. p. 97.

cient power to assimilate them.* Desgenettes drank with impunity from the glass of a patient in plague, who died an hour after. In like manner the saliva of a hydrophobic patient has been received into the stomach with impunity;—two very curious and well-authenticated instances of which are related in the *Salzburg Medizinische Zeitung*. Omodei considers the following only as negative proofs of non-infection by the stomach, where it is said, “*I cani veduti da Deidier, Valli, e Desgenettes mangiarsi impunemente le carni degli appestati, ingollarsi le marcie, e lambire le piaghe dei carboncelli.*”†—Upon this subject Professor Hartmann expresses himself rather differently, “The acute, and (in the cause of humanity) so intrepid Valli has shown that the matter of hydrophobia, small-pox, and plague, (consequently also of typhus,) which, when inoculated, unmixed, produce their peculiar diseases, remain inert when previously mixed with the gastric juice.”§ To the absorption of contagion in a gaseous form by the external skin, as supposed by Soemmering and others, it may be objected, that absorption, as proved by late physiological experiments, is carried on through that channel with too great difficulty. In a solid form it might be absorbed through the skin with the aid of friction; but the clothes afford such protection, that we must suppose the contagious matter to be applied intentionally, if it ever enter the body by this channel. Professor Soemmering|| carries his ideas of external or cutaneous absorption so far as to suppose the tumefaction of the abdominal viscera, after protracted intermittents, to be occasioned by the febrile miasma taken in by the lymphatics, and applied directly to those parts: but were this opinion correct, we might expect buboes to occur also in intermittents as commonly as in plague. The reception of contagion into the body has been compared to the effects of magnetism¶ and elec-

tricity, owing to the suddenness with which many have supposed themselves to be infected. Antes informs us, that in Egypt, when a person supposes himself infected by the plague, he will exclaim, “I am struck or smitten;”* but in many instances this is purely ideal; for in typhus a peculiar burning state of the skin, *calor urens or mordax*, often imparts such a tingling sensation to the fingers as to excite apprehension; and the sickening soon after such a feeling, or the perception of a bad smell, is certainly referred to such a cause. Fewer objections appear to occur to its introduction by application to the mucous membrane lining the mouth, nose, fauces, and lungs; they are always in a proper state of moisture, and afford an extensive vascular and nervous surface most favourable to absorption; and by these surfaces only we are warned of those impure mixtures in the air which affect respiration, or are otherwise prejudicial to health.

(To be continued.)

From the London Medical and Physical Journal.

ON ONE OF THE FUNCTIONS PERFORMED BY THE LIVER, *More Particularly in the Fœtus, and in Amphibious Animals*. By EGERTON A. GENNINGS, Member of the Royal College of Surgeons.

In this paper I shall endeavour to show that the liver, like the lungs, possesses the power of *decarbonizing the blood*. I am aware that other persons have entertained a similar opinion, but several facts are here detailed which

plied to smells. A person is supposed, therefore, to be in a state similar to the above, who, being placed within the active sphere of a contagion, is acted upon by a certain influence or emanation from the sick, which at the instant of infection imparts to him a peculiar smell imperceptible to every other person present. A summary of this obscure and perplexing, yet interesting subject, is given by Sprengel. —*Institutiones Medicæ*, vol. ii. p. 290. In Kluge, *Versuch einer Darstellung des Animalischen Magnetismus*, 1818, is contained a very interesting history of its rise and progress, with an astonishing number of references to the almost innumerable writers on animal magnetism; and in Frank's *Præceps Med. Universæ Præcepta*, vol. ii. 1. p. 461, a storehouse of medical knowledge, are contained some very amusing dialogues between the author, and some patients, whom he had, by magnetic manipulations, brought into a state of crisis or somnambulism. Professor Wolfart's magnetizing institution at Berlin, and the mode of operating in the wonderful cures said to be performed, are very impartially described by Dr. Meissner, *Bemerkungen aus der Taschenbuche eines arztes*, p. 21.

* Wolmar compares the effects of plague contagion on the body to the explosion of gunpowder.

* *Pathologie oder Lehre von den affecten des lebenden Organismus*. Von J. D. Brandis. Copenhagen, 1815.

† *Histoire Médicale de l'Armée d'Orient*.

‡ “Dogs were seen by Deidier, Valli, and Desgenettes to eat with impunity the flesh of those who died of plague, and to devour the pus, and lick the sores of the carbuncles.”—*Annali di Medicina*, 1823. P. 367.

§ *Die Theorie d. ansteck. Typhus*, p. 89.

|| *De Morbis Absorbentium*, p. 13.

¶ The somnambulist, as he is improperly termed, is placed, by certain emanations radiating from the body of the magnetizer, in an intermediate state of sleeping and waking. His external senses are sealed up, but his internal perceptions become exalted. He is rendered acutely sensible to every feeling, and to every want of the magnetizer; and substances acting upon the latter are instantly transmitted to the patient. Without ever erring, the somnambulist can by taste distinguish magnetized water, though imperceptible to every one else. The same acuteness is ap-

have not been, I believe, previously observed; or, at least, have not been publicly stated.*

If we examine the circulating system in different animals, we shall find some that require the blood to be constantly exposed to the influence of oxygen; others that can support life for a considerable time without such exposure; and a third class that live without ever having their circulating fluid exposed to its influence.

In the first class, or those that require a constant supply of oxygen, the greatest diversity is observable in the apparatus by which the blood is exposed to its influence. In those animals which have a double heart, and double circulation, lungs are used; in those that have a single heart, and a single circulating system, —under which head fall fishes and the *arachnida*, or spider class, —gills are the organs employed; while, in the incubated egg, oxygen exerts its influence on the blood through the medium of a membrane attached to the shell. Thus we see in those animals to whom respiration, or a process similar to it, is most necessary, that a diversity of means are used to effect the same purpose. But in these, and in all other animals in whom a circulation exists, a liver is found, composed of an aggregation of minute glands, through which a large portion of the blood, when loaded with impurities, is obliged to circulate.

I have said that in all animals that have a circulation a liver is found, and in no others does it exist; although they may have a stomach for the digestion of food; and in some of them, as will be shown hereafter, even a fluid similar to bile is secreted.

Those animals which belong to the second and third classes, into which I have for convenience divided them; namely, those that can support life for a considerable time, and those that can live altogether, without the exposure of their blood to the influence of oxygen, show most decidedly the important connexion that exists between the liver and the circulating system.

In the former of these—amphibious animals, and those birds that are good divers,—we find that, in proportion as they are able to suspend the process of respiration, the liver increases in size. Amongst birds, the Divers, or those arranged under the genus *Colymbus*, have the smallest lungs and the largest livers. The cormorant, also, (*Pelecanus Carbo*), is an excellent diver, being able to suspend its respiration for a considerable time. Its liver is very large, while its lungs are comparatively small. In this bird, (as also in the other divers,) not only does the blood from the mesenteric, splenic, pancreatic, and gastric veins pass to the liver, but, from the very large vessels by which the mesenteric vein communicates with the veins emptying themselves into the cava and iliac veins, the blood passes with equal facility either through the vena portæ or the vena cava. So that when the bird is deprived of air, by diving, an additional quantity of

blood is passed through the liver, in consequence of the pulmonary circulation being obstructed. In so small a bird as the *Fulica atra*, or common coot, I have, without difficulty, injected the system of the vena portæ from the iliac vein.*

The structure of amphibious animals show a still more complete arrangement for the transmission of blood to the liver, when the respiration is obstructed. In them the liver is always very large. In some of them, as the frog, the circulation is carried on by a single heart; so that, when the lungs do not perform their functions, the obstruction of the circulation through the branches distributed to them does not interfere with the general circulation. In others, as the otter, although a double heart and circulation is found, a communication exists between the two sides of the heart, through the foramen ovale, so that when the pulmonary circulation ceases, the blood passing immediately from the right to the left side of the heart, a single circulation, like that in the frog, is immediately established.

In those animals that have the circulation carried on entirely without the blood being exposed to oxygen, the liver is proportionably larger than in any other. Thus, in the fœtus in utero, the liver is one of the first organs developed, and is by far the largest organ in the body. It is thus large, too, at a time when it should be the smallest, if it be true that the sole function of the liver is the secretion of bile to assist in digestion.

If the early formation of an organ be any proof of its great importance in early life; and if the service to which it is first devoted be any guide to the function it is ultimately to perform, the liver must be of the greatest importance to early life, and its function must be subservient to the circulation. The first of these assertions is proved by examining the incubated egg: for we find that the liver is developed as early as the fourth day of incubation, although at that time the heart is not developed, and the lungs do not appear until a day or two afterwards. That its function is subservient to the circulation, is proved by the veins first formed all terminating in the vena portæ; the circulating fluid being thus obliged to pass through the liver. As the gall bladder does not appear until a day or two later, the liver cannot be engaged at this time in the secretion of bile.

Having thus endeavoured to show how closely the liver is connected with the circulation of the blood, I shall, in the next place, endeavour to prove that the service it performs in the digestion of the food is but of secondary importance.

M. Cuvier has proved that the conglomerate

* It may be mentioned also as a curious fact that birds of the Struthious class, (as the ostrich and cassowary,) from the rapidity with which they run, and are therefore liable to have their respiration suspended, have also large livers and small lungs.

* See Ornithologia, by J. Jennings, p. 55.
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glands which constitute the liver exist in all animals that have a circulation, and do not exist in any that have not a circulation, although in them digestion takes place. Amongst insects this fact is strongly marked. They are divided into two great classes; the *Arachnida*, comprising the spiders and scorpions, and the true *Insecta*, which comprise all other insects. In the former a circulating system is found, and also a liver: in the latter there is no circulating system, and no liver. What is particularly remarkable, and perhaps shows more decidedly than any other fact that the liver is subservient to the circulation, is this, that, although in the latter, there being no circulation, no liver exists, yet bile is secreted for the purposes of digestion from small, slender, filiform vessels, which empty their secretions into the alimentary canal. If the conglomerate glands constituting the liver in all animals having a circulation, be merely formed for the secretion of bile, why this deviation from the ordinary structure, which prevails in animals so closely resembling them in other respects, as the *Arachnida*? Moreover, we learn from the examination of some of the *Zoophytes*, that digestion may take place where a stomach only exists,—no liver or alimentary canal being present; the secretions from the stomach itself effecting all the necessary changes in the food.

Are we not, then, justified in concluding that, as we find digestion taking place in some animals without a liver, while in others bile is secreted from small vessels into the alimentary canal, this organ is but of secondary importance in the process of digestion.

On the other hand, are we not also justified in concluding that an organ, which is universally found where there is a circulating system, and there only, which is of comparatively small size where the respiration is perfectly performed by lungs,—which increases in size in those animals which have gills as an imperfect substitute for lungs,—which is found still larger in amphibious animals, whose circulation is occasionally suspended,—and which is the largest organ in the body in the fœtus, whose circulating fluid must be purified entirely without exposure to oxygen,—are we not, I say, justified in concluding that the primary function of such an organ must be similar to that of the lungs: that it must be subservient to the circulating system.

It may be objected that if, as I suppose, the liver does in amphibious animals perform the function of the lungs, these animals could live entirely without respiration. But how frequently do we see in the animal economy, when two organs are engaged in performing the same function, that one organ is able to perform almost the whole duty of the other, and yet cannot entirely dispense with its assistance. This is particularly the case with the skin and kidney. When one secretes copiously, the other enjoys comparative rest. From the length of time that some diving birds and amphibious animals remain under water, it is certain that death would result if the blood were not deprived of its impurities by

some means; and certainly their anatomy shows that provision is made for the passage of an increased quantity of blood through the liver, that organ being proportionately increased in size to enable it to perform so important a function.

With regard to the function which I suppose it to perform in the fœtus, it may be said that the placenta purifies the blood. I grant the importance of the placenta; but we know that the principal change produced in the blood is the separation of carbon from it. This the placenta cannot effect, for it throws off nothing; while we know that the liver separates an amazing quantity of carbon during uterine life. This is proved by the quantity of carbon contained in the meconium; which secretion, as it cannot be of any use in the digestive process, can only be looked upon as a quantity of useless matter thrown off from the general system.

In what I have hitherto said it has been my object to point out, more particularly, the functions of the liver in amphibious animals and the fœtus. In them the other organs concerned in the purification of the blood being less perfect, the liver is found proportionably more developed. But, in animals that have a perfect respiration by lungs, even in man himself, we may observe many facts that point out the close connexion existing between this organ and the organs of respiration.

All who have observed the human subject must be aware that the liver is assisted by other organs in the performance of its function. For instance, the well known fact, that after severe burns, which have rendered a large portion of the skin unable to perform its function, persons will frequently die of suffocation: this shows that the lungs and skin both perform the same function, or so great an oppression of the lungs could not be produced by such a cause.

When a European is exposed to a tropical climate, where, from the state of the atmosphere, but little carbonic acid is formed during respiration, in what way do we find the circulating fluid purified? For a short time the skin, which is generally acknowledged to assist the lungs, acts profusely. Presently, however, the skin becomes dry and arid, and bile is secreted in such quantities as completely to disorder, instead of assisting, the digestive process.

It is true we cannot point out the manner in which the liver effects its changes in the circulating fluid, with the same precision that we can explain the function of the lungs; but, while there are so many circumstances connected with secretion that we are unable to account for, let us not presume to say that an effect cannot be produced because we cannot follow nature through every step of her process. Let us rather carefully observe the organs she finds necessary for effecting her different purposes, and acknowledge their use, though unable to account for their actions.

Leamington Spa, Warwickshire;
August 8th, 1828.

P. S.—Since the above paper was written, I have had much pleasure in reading a note by Dr. Elliotson, in the edition of Blumenbach's Physiology which he has recently published, in which he has mentioned many facts tending to support the same view of the function of the liver which I have endeavoured to advocate.

From the Revue Medicale, &c.

SUR L'EMPLOI DE L'IODE CONTRE LES TUMEURS DU SEIN. Par M. le Docteur BAYLE.

One of the most important acquisitions which the healing art has made in modern times, is, without contradiction, the application of iodine to the treatment of diseases. Since the excellent work upon this medicine, by Dr. Coindet, who has the honour of having been the first to employ it, a host of physicians, both in France and other countries, have verified the clinical results of the Swiss physician, and demonstrated the practical utility of his discovery. MM. Magendie, Benaben, Gimelle, Sablairoles, &c. in France; Brera, in Italy; Hufeland, Formey, Decarro, Locher-Balber, in Germany; Baup, Irmenger, in Switzerland; Manson, Gairdner, Baron, in England, &c. have published a mass of facts, which evince the efficacy of the ioduretted preparations, not only in the treatment of goitre and scrofula, but also of a multitude of other diseases, more or less refractory to other therapeutic means.* Indurations of the breast are unfortunately among the number of those which too frequently resist the most methodical and skilful treatment. In these iodine has also been employed, but upon too small a number of patients to enable us to form a positive opinion of its efficacy. I am acquainted with but two instances, one reported by M. Benaben, and the other by M. Gairdner, an English physician, to whom we are indebted for an interesting pamphlet upon iodine.† In both cases, a cure was effected. I will relate both of them, after having detailed an analogous fact of which I have just been witness, where the iodine was employed with complete success; they will be followed by a fourth, in which the tumour of the breast was of a cancerous nature.

Case 1.—Madame de G—, æt. 30, of a lymphatic constitution, was descended from a mother who, sometime previous to the birth of her child, had had an attack of apoplexy, the consequence of which was an incomplete hemiplegia, which continued through life. Madame de G— had been rachitic in her infancy; her extremities were deformed, and her abdomen habitually large; she was subject to

diarrhœa, and on several occasions had presented all the symptoms of *tabes mesenterica*. From this period her health had always been very delicate. In 1824 or 5, she married. Five or six months afterwards, she injured her right breast by a fall, which was followed by swelling and inflammation of that part; these symptoms yielded to the application of leeches, emollient cataplasms, &c. with the exception of an engorgement about the size of a walnut, which could not be removed; it was an indolent nucleus, of a medium hardness, situated towards the middle of the gland.

About a year afterwards, this woman became pregnant, and was safely delivered; she suckled her child herself, and from that period the tumour of the breast made rapid progress, and soon acquired the size of an orange. About this time, grief, occasioned by the sickness and death of her husband, contributed still further to accelerate the growth of the tumour, but as it continued indolent, little attention was given to it, and the patient applied her child to both breasts indiscriminately. After the lapse of several months, pains began to be felt in the tumour, which, however, was little sensible to the touch; hemlock poultices were directed, but instead of producing any salutary effect, they increased the inflammation already existing. From this period the tumour greatly increased in size. Leeches repeatedly applied, emollient poultices, &c. failed in preventing suppuration; and after some days, fluctuation being very evident, an opening was made, through which was discharged a large quantity of purulent matter mixed with blood. Notwithstanding this discharge, however, the indurated portion of the breast, instead of diminishing, continued rather to increase; it was larger than an orange, irregular and unequal, and occasioned little pain when handled. The poultices were productive of no advantage, and as the patient was much oppressed from their weight, they were discontinued.

About this period, (April, 1828,) Madame de G—, in her anxiety to be rid of her disease, secretly consulted a surgeon, who directed five or six leeches to be applied daily around the tumour. I saw her six or seven days afterwards, pale, dejected, scarcely able to maintain herself in an erect posture, and frequently threatened with syncope; the tumour had rather increased than diminished; the suppuration was much more abundant.

Aware of the effects of iodine in glandular engorgement, I directed frictions upon the tumour, with a drachm of the ointment of the hydriodate of potash, containing from four to six grains of the salt, to be made daily, and fifteen drops of the tincture of iodine to be taken internally in the same space of time. At the expiration of fifteen days an improvement was already perceptible; the pus was less in quantity and of a better consistence, and her general health improved; some gastric derangement now supervening, occasioned the suspension of the tincture.

From this period till the commencement of

* In the first volume of the *Bibliothèque de Thérapeutique*, will be found a digest of all that has hitherto been written, in all languages, relative to this valuable medicine.

† Essay on the Effects of Iodine. London, 1824.

July, when this treatment was discontinued, the quantity of the hydriodate was progressively augmented, until ultimately it was employed in the proportion of two drachms to the ounce. The internal administration of the tincture was suspended on three or four occasions, but always renewed as soon as circumstances would permit. This tincture, applied in frictions upon the tumour itself, three or four times, gave rise to general inflammation of the breast, which induced me to discontinue it temporarily, and resort to emollients; but I observed that after each of these accidents, the progress of the resolution was much more evident.

Under this treatment, continued uninterruptedly for the space of three months and a half, the tumour became in the first instance sensibly softer, and somewhat increased in size, and subsequently diminished progressively till the 19th July, when, visiting her for the last time, I found no vestige of the glandular enlargement, the breast having assumed the size and form of that on the opposite side. The pus, which at first had been serous and copious, afterwards became thicker and less abundant. On one occasion, the external opening accidentally closed, and the patient, besides tumefaction and pain of the breast, was attacked with a profuse serous diarrhoea, which may be regarded as supplementary to the discharge of the breast, since it was suddenly suppressed, when the latter was re-established. It may be remarked also, that the general health of the patient, hitherto delicate, underwent a considerable improvement; the catamenia, which had been suppressed during eighteen months, were re-established, and the digestive functions were more vigorously performed.

Reflexions.—Tumours of the breast, whatever their nature may be in other respects, are so difficult of cure when they have acquired the volume, induration, and character of the one, the description of which has just been given, that the preceding case is certainly well worthy the attention of physicians. It would be very desirable to determine the character of this tumour; on the one part its hardness, and the inequality of its surface, might induce a suspicion of its cancerous nature; while on the other, the absence of lancinating pain, and the lymphatic constitution of the patient, would rather lead to the belief of its scrofulous character; the latter opinion is confirmed by the result of the treatment. We know, indeed, from the researches of Coindet, Brera, Kolly, &c. the efficacy of iodine and its preparations in scrofulous affections, while there is not, perhaps, a single case of confirmed cancer which has yielded to this medicine. We shall, however, hereafter detail two cases very remarkable in the latter point of view.

Case 2.—A servant in one of the hotels of Paris, æt. 33, married, and the mother of several children, consulted me, observes M. Gairdner, for a tumour in the breast, which made its appearance about two years before. It was unattended with pain, but she was alarmed by

its recent increase of size. The preceding year she had consulted a surgeon, who advised its extirpation. This opinion gave her so much anxiety, that she determined to consult M. Dubois, and this eminent surgeon expressed his belief of its scrofulous character. For the space of three months, all the remedies employed in this description of diseases were unsuccessfully tried. A scruple of the ointment of the hydriodate of potash, placed in the axilla at night, completely dissipated the tumour in about six weeks.

Reflexions.—This case bears a strong analogy to the preceding. It is to be regretted that the condition of the tumour is not more accurately described, and that there is nothing in the case to elucidate the nature of the disease; but the opinion which had been given of the propriety of extirpating the tumour, is a sufficient proof of its suspicious character, which again is confirmed by the inefficacy of the anti-scrofulous remedies employed in the treatment.

Case 3.—J. L.—, æt. 51, had ceased to menstruate for the space of five years, and bore the impress of an extraordinary development of the nervous system, which evinced its influence in all the diseases with which she had been attacked. About eighteen years ago, one of her children bit off half the nipple of the right breast; acute inflammation supervened, and was relieved by the usual means; but an induration remained, about two inches in extent, which, for the last two or three years, was the seat of fugitive and shooting pains, recurring at remote intervals. In September last, she injured the breast by a fall upon a cane fixed in the earth; inflammation immediately supervened, and notwithstanding the remedies employed, ran through all its stages; an abscess formed, and opened spontaneously twenty-one days after the accident. Consulted at this period, I enlarged the orifice, and directed the poultices to be continued. This was on the 2d October, and by the 12th cicatrization had taken place, and all signs of inflammation had disappeared, but the primitive induration had considerably increased; there had even formed a second tumour, distinct and separate from the former, of which it had not yet attained the induration; the skin was redder than before, and the darting pain more frequent and acute. These indurations, their seat, the nature of the pain, and the age of the patient, portended the approaching cancerous degenerescence of the mammary gland. Frictions were directed with the hydrioduretted ointment, in the proportion of a drachm of the salt to an ounce of axunge; and to accelerate the cure, I was desirous to administer the tincture internally, but was deterred for a moment, by the apprehension, lest so active a medicine might produce some deleterious effect upon a woman whose constitution was so susceptible, that a common purgative draught was sufficient to throw her into convulsions. Any effect of this kind I hoped to obviate by the use of opium, and accordingly prescribed six drops of the tincture

of iodine to be taken three times a day, in combination with the liquid laudanum of Sydenham. The laudanum exerted no injurious effect upon the iodine, the dose of which was progressively increased, according to the established rule; far from being hurtful, it promoted the cure, and rendered unnecessary the temporary suspension of the iodine. Such was the salutary effect of the opium, that having been omitted on one occasion, the patient rejected the iodine a few minutes after having swallowed it, and was troubled all day by a sensation of smarting and constriction in the throat. In other respects the treatment presented no peculiarity; it was begun on the 28th of October, and terminated with entire success on the 30th of November. (*Case reported by M. Benaben.*)

Reflexions.—This case is distinguished from the two preceding by characters which it may be well to bear in mind. In the former, the tumours were indolent, and the subjects presented all the marks of the lymphatic temperament; now, it is known that iodine frequently succeeds in diseases of this nature. In the latter case, the tumour was hard as in the other two instances, but it was also the seat of lancinating pains, which, rare at first, occurred much more frequently afterwards. This symptom, together with the form of the tumour, the organ which it occupied, and the age of the patient, induced M. Benaben to suppose that the disease had degenerated into cancerous affection; and it must be admitted, that it would be difficult positively to affirm that the apprehensions of this physician were unfounded.

This uncertainty relative to the nature of the disease, doubtlessly enhances the importance of the case we have just related; for the cure of a scrofulous tumour would be a fortunate, but not an extraordinary event, while that of genuine cancer, a disease almost invariably fatal, would be an important acquisition to medical science.

To remove all doubt relative to the nature of the disease in this instance, it would be necessary that the annals of medicine should furnish us with cases of cancer cured by iodine, and unfortunately none have hitherto been recorded; the only one within my knowledge, is a case of cancerous ulcer of the breast, which, after having been considerably improved by the use of the ioduretted preparations, relapsed with increased violence, and rapidly terminated in death. The following is the case alluded to, which I shall quote entire, on account of the extraordinary changes which took place in the disease during the administration of the medicine. It is reported by Dr. Hill, in the *Edinburgh Journal* for April, 1826.

Case 4.—A widow, æt. 62, the mother of ten children, and possessing a constitution impaired by hard labour, had a large, deep, and fœtid ulcer, with indurated and unequal edges, situated upon the breast. The subjacent ribs were exposed, but still covered with their periosteum. Her general health was

much deteriorated, and besides a small, dry, and frequent cough, she presented all the symptoms of a rapid decline. The ulcer had all the characters of carcinoma. Dr. Hill in the first instance directed the application of a raw carrot poultice, to be renewed every six hours, some laxative medicine, and Fowler's arsenical solution, in the dose of fifteen drops three times a day; pledgets of lint, wet with a dilute arsenical solution, were laid upon the surface of the ulcer, and a carrot poultice applied above. This treatment, continued for two months, effected a sensible improvement in the health of the patient, and the factor of the matter discharged from the ulcer was lessened. Six months afterwards, her general health was so much improved, and the aspect of the ulcer so favourable, compared with what it had previously been, that it was resolved to make trial of compression, according to the plan recommended by Dr. Young. This was employed during three months, at the expiration of which time, the edges of the ulcer appeared to have some tendency to cicatrization, but all the surrounding parts, the glands of the axillæ, &c. swelled, and became so painful that it was obliged to be discontinued.

All the unfavourable symptoms now re-appeared with renewed violence; a livid fungus sprung up from the centre of the ulcer, and gave rise to frequent hemorrhages, which were arrested by means of bole armenian and alum. Bark and opium were given internally, and the ulcer dressed with different stimulating applications. Cicatrization took place at some points, but new tubercles formed, ulcerated, and thus renewed the disease. This state of things continued with little variation about two years, when Dr. Hill having employed every means both external and internal, with the exception of iodine, resolved to make trial of this medicine, and directed the ulcer, which was six inches in diameter, to be covered twice a day with an ointment composed of one drachm of the hydriodate of potash to the ounce of axunge. Not only was this application unproductive of pain, but the patient stated that it was attended with marked relief. Some days afterwards, a solution of the hydriodate, in the proportion of thirty-six grains to the ounce of distilled water, was directed to be taken in the dose of thirty drops a day; a larger dose excited nausea and vomiting. In a few days, the discharge from the ulcer, which had been very copious, fœtid, ichorous and corrosive, sensibly improved; the ulcer itself assumed a more favourable appearance; the livid tubercles softened, and were completely detached; and lastly, the lancinating pains and hemorrhage ceased. At the expiration of a few weeks, the whole ulcerated surface presented the appearance of a simple wound, discharging pus of a good quality. All the ulcerated points round about had softened and completely disappeared; and finally, in about four months cicatrization had taken place over the whole inferior portion of the wound; the following month, this process, which extended from below upwards, had made still further

progress, and this frightful ulcer was reduced to the size of a sixpence. Not only the mammary gland of the diseased side, but also that of the other, had completely disappeared—no trace of them remained. Of the whole assemblage of alarming symptoms, there now only remained a slight induration of the skin, about half an inch long, and as thick as the finger of a small child. Frictions with the ointment of the hydriodate of potash were directed to be made upon this part twice a day, in the hope of promptly effecting its removal, but in vain; the confident expectation of curing his patient, which Dr. Hill had entertained, rapidly vanished.

Notwithstanding the judicious employment of the same means, this indurated point became livid, increased in size, the ulcer broke out anew, and, in a word, all the most violent symptoms successively re-appeared, and the unfortunate patient died with all the indications of the cancerous diathesis.

Reflexions.—If the cancerous nature of the preceding cases be doubtful, the same remark cannot be made in relation to that which we have just detailed. I will not recapitulate the principal characters which it presents to us. The only point to which I wish to direct the attention of practitioners, is the treatment of the disease by iodine and the hydriodate of potash. Under the influence of this medicine we see that the tumours became softened, the lancinating pain and hemorrhage ceased, and the ulcer cicatrized almost completely. The disease, it is true, re-acquired its primitive violence, and quickly terminated in death. But it may be remarked, that in this instance all the signs of a general cancerous infection, if I may be allowed such an expression, were present. Is it not probable that if the affection had been limited to a smaller number of organs, the preparations of iodine would have been effectual in its treatment? The extraordinary melioration which followed the use of those remedies will, at least, justify such a supposition, and should induce all practitioners to make trial of iodine in this deplorable disease.

Conclusions.—Hitherto iodine has been too seldom employed in the treatment of tumours of the breast, to enable us to advance any general opinion relative to its efficacy in these affections.

In the two cases first related, the tumours, which were probably of a scrofulous character, were cured by the employment of iodine. The third is also a case of cure of a tumour in the breast; but this tumour, hard and lobulated, was the seat of lancinating pains, and may have belonged to cancer.

The fourth is a case of true ulcerated cancer of the breast, and, for a time, was much improved by the iodine; this medicine, therefore, holds out the hope of cure in other less severe cases of the disease, and should induce physicians to resort to its employment in these desperate maladies.

I may add, moreover, that a number of facts relative to cancer in various other organs, tend also to establish the utility of iodine in these

affections. Thus Dr. Hennemann has published a case of cancer of the uterus, resembling the fourth case related in this memoir, inasmuch as it was temporarily relieved by this medicine. *Hufeland's Journal*, February, 1823. By the same means Dr. Hirsch has effected the resolution of indurations of the neck and tongue, which strongly resembled scirrhus. *Rust's Magazine*, 1826. Klaproth has cured an induration of the orifice of the uterus, which he considered to be cancerous. *Hufeland's Journal*, 1823. In the same Journal M. Wagner relates a case of tumour, which he calls scirrhus, and which he was prevented from extirpating, by reason of the cachectic condition of his patient, in which the iodine was equally successful. Professor Ullman strongly recommends the hydriodate of potash in cancerous ulcers, as having been productive of surprising effects in such cases. *Graëfe's Journal*. And lastly, M. Magendie, in his *Formulary*, article *Iodine*, relates two cases of cancer of the tongue cured as if by enchantment, by means of this remedy.

From the London Medical Gazette.

ON THE SPECIFIC EFFECT OF ATMOSPHERIC POISON ON VARIOUS STRUCTURES OF THE BODY, as connected with the production of Disease—especially Fevers. By EDWARD SEYMOUR, M.D.

The theories of the origin of fever have occupied the attention of physicians and men of observation from the earliest ages, and the opinions formed having been derived from the existing state of knowledge, generally contained within themselves no very unfair estimate of the prevailing philosophy of the period.

It is not the object of the following remarks to remind the reader of the accurate observations of the Greek school, or of the selections, with few additions, made from that school by the Arabian physicians; neither is it necessary to detain him with the errors of the chemists, the mathematicians, the vitalists, and the humoralists, who succeeded them. The eloquence bestowed on these speculations still serves to point out among the surrounding darkness some specimens of laborious investigation, and makes us regret that their authors had not flourished at a period when knowledge had become more matured.

The ancient physicians laboured under great disadvantages with regard to their investigation of the real source of disease, from being prevented examining bodies after death. The religion of Greece and Rome forbade its votaries to violate the sanctity with which it enveloped the remains of the dead; thus the talents of the great and learned men who first studied the science and practised the art of medicine were obliged to seek for the causes of disease in some prevailing system of philosophy, whose principles were believed to influence the groups of symptoms

which their accurate observation has so well described.

On the revival of learning, the idolatrous admiration paid to the works of the ancient philosophers, particularly Plato and Aristotle, was of itself a great obstacle to the advancement of the true nature of disease. Scholastic disputations only served to rivet more strongly the fetters of error: and thus we find the points of doctrine which agitated the schools in the sixteenth century now principally subjects for pity or surprise.

The seventeenth and eighteenth centuries present many instances of rare and original research, and anatomy being cultivated with ardour: the appearances of disease after death were minutely described. The sepulchretum of Bonetus, the works of Spigelius and Morgagni, &c. present striking collections of such appearances. But the example was not followed by physicians generally; and we shall find that among the various epidemic diseases, of which we have histories, in which the symptoms are minutely described, the description of appearances in the bodies of those who died is scarcely ever met with, and the cause of death is not sought for in the lesion of important viscera or the long continued suspension or alteration of important functions by sympathy with the injured part, but in the prevalence of an acid, or an alkali, or the lentor or viscosity of fluids.

The few last years have been devoted by men of science, in the neighbouring countries and our own, to the lesions which are to be observed in the different structures of the human body in those who have died of fever, and the French school of medicine in particular has undergone a most important change since more accurate methods of examining the bodies of those who have died of fever have been adopted.

The generally received opinion of the origin of epidemic fever appears to be that it is the effect of a poison arising from marshes, from the exhalations of filth, crowded bodies, or from a state of the atmosphere, which in warm, moist, or variable seasons, is assimilated to marshy vapour under ordinary circumstances. The explanation of the action of this poison on the human body, and the manner in which it produces its effects, although it has reigned in the schools for more than half a century, appears to be liable to great objections, if not altogether hypothetical, and principally because it was invented by men very partially acquainted with the action of other poisons, and almost entirely ignorant of the appearances which in different epidemics were presented after death.—(Currie's Medical Reports, vol. i. p. 237.)

It appears that the truth may be approached by considering the effects of other poisons on living structures. Poisons destroy life by affecting different parts or structures, and in many instances lesions of such parts are produced, which are the immediate effect of the action of the poison.

"Dans certain cas (says M. Orfila) le poi-

son est absorbé et porte son action meurtrière sur le cerveau, le cœur, et autres organes. Quelquefois ce sont les membranes de l'estomac corrodées qui agissent sympathiquement sur les organes et suspendent leur fonctions, sans qu'il y ait lieu absorption. Enfin, dans d'autres circonstances très rares, la mort est la suite de l'inflammation de l'estomac irrité par ses substances veneneuses."—*Orfila, Toxicologie*, page 16. Vide *Mem. de Mons. Segalas, Jour. de Physiologie*.

All poisons appear to be received into the system either through the medium of the nerves or through the circulating system, or through the lymphatics, or by absorption by the lungs.

Of the first we have no direct proof: the rapid and sudden extinction of life, on the immediate application of some poisons to a wound or to the tongue, would imply their transmission through the nerves, but the experiments of physiologists have been unable to demonstrate this. Dr. Barry, well known from his interesting work on circulation and absorption, found by experiment on a living animal that a poison which speedily proved fatal on insertion in a wound, when applied directly to a nerve isolated, was innocuous.*

The absorption of poisons into the system through the medium of the circulation rests on abundant evidence from the experiments of Mr. Brodie and M. Magendie, under circumstances where the agency of the nerves was entirely excluded.—(See Mr. B.'s experiments, *Philosoph. Transactions* for 1811.)

"I separated (says M. Magendie) from the body the thigh of a dog, previously stupified by opium: the separation was made in such a manner that the thigh communicated with the body only by the crural artery and vein. I introduced into the crural artery a tube of quill, on which I fixed the vessel by two ligatures. The artery was afterwards divided circularly; I did the same by the crural vein: by this means there was no longer any communication between the thigh and the rest of the body, except by means of the arterial blood which flowed to the thigh, and the venous blood which returned to the trunk."—*M. Magendie, Jour. Physiologie*, vol. i.

Under these circumstances, poison inserted into a wound in the leg of the animal destroyed life in the same manner as when the experiment was conducted under ordinary circumstances. The great rapidity with which absorption by the lungs takes place is a circumstance of ordinary observation, and proved by repeated experiment. Within a very short space of time the vapour of the essential oil of turpentine received into the lungs will show itself in the urine by the peculiar odour it imparts to that secretion. Mineral and vegetable poisons received into the system in any of these ways appear to extinguish life by acting immediately upon one or more of the different textures

* The same experiment was made by Fontana and Magendie.

of which the body is composed. Thus the woorara poison, and the expressed oil of the laurus cerasus, according to the experiments of Mr. Brodie, appear to act immediately on the brain, whence the respiration is suspended, and consequently the action of the heart. The upas antar, and the juice of tobacco, appear to act immediately on the heart, affecting its contractility, and rendering it insensible to the stimulus of the blood, and thus destroying life.

The nux vomica, either applied to a wound or taken into the stomach, appears to exert its poisonous influence on the spinal nerves.

Arsenic, whether received into the stomach or applied to a wound, appears to act immediately on the mucous lining of the stomach and bowels.

Lead exerts its immediate effect on the muscular structures, first altering and afterwards destroying their inherent power of contractility.

Here, then, we have known and acknowledged examples of vegetable or mineral poisons destroying life by acting upon different textures, the phenomena which occur being symptomatic of the injury which that part or power sustains.

The poisons generated by the atmosphere, by the exhalation from marshes, from the effluvia of putrid animal matter, &c. &c. have hitherto been considered to produce their deleterious effects by acting exclusively on the brain and nerves; producing, first, depression of the action of the heart and arteries: reaction succeeds; and during this latter stage injuries of structures, whose integrity is necessary to life, are produced.

This appears to me to be only one of the modes of action, for it is by no means necessary, nor is it probable, that miasmata generated in the manner related should produce the same poison, or consequently affect the same texture uniformly; and thus we find epidemic fevers in which the poison appears to act directly on the brain, and various effusions in, or lesions of this viscus, are discovered after death. Another condition of the air, affecting principally the fauces, Schneiderian membrane, and mucous membrane which lines the bronchial tubes, produces that species of fever called catarrhal.

The effluvia of marshes appear to alter the condition of the brain and nervous system, to impair its functions, producing the different kinds of ague; and it must be observed that the remedies which uniformly relieve this disease are those which diminish the increased sensibility of the nervous system, or change its action;—bark, opium, mineral tonics, or strong moral impressions, as fear, superstition, &c.

There is a large class of fevers, generally of a remittent type, produced by a poison which appears to act directly on the mucous surface of the stomach and intestines, either affecting the glandular structure, producing deep ulcers with a hard elevated edge, occasionally eating their way through the peritoneal coat;

and in other cases causing a condition of the vessels of the part ending in sloughing—a condition the very opposite to increased action, and which in other parts of the body has received the name of passive inflammation.

In the various histories which we possess of epidemic sore throat, with or without eruptions, which have appeared in Europe at different times, it must be obvious that the degree of affection of the mucous membrane of the fauces was the measure of the danger of the disease. The poison generated in the atmosphere absorbed into the circulation, produced its specific influence on the mucous membrane of the mouth and fauces, in many cases filling with blood, more or less actively, the capillaries of the cutis. Had the poison generated in the air, and afterwards, rendered more violent, as we know it is, by the exhalation from crowded bodies, affected specifically any other portion of the mucous surface of the interior of the body, it is probable that a thousand vague hypotheses would have been invented to account for the origin of symptoms which in reality denoted the rapid injury done to an important and highly sensitive portion of the body. Morton, the first English writer on this disease, attaches the whole importance to the injuries of the mucous surface, afterwards spreading to the adjacent glandular structures.

“Si quando venenum istius modi crisi perfectâ per cuticulam propelli haud potest, tanquam venenum pestilentielle glandulas sponte petit, narium, faucium, inguinum easque inflammat et exulcerat necnon carcinoma, parotides, et bubones, excitat. Quantum tonsillas, uvulam, fauces, nares et quamdiu in tumuisse vidi, quam sordidâ scabie obducta ab eâdem causâ animadverti.”—*Morton de Morbillis et Febre Scarlatinâ*, cap. iii. case 2.

In the severe forms of this disease the accompanying fever is of that kind to which Dr. Cullen has assigned the characters of typhus. Here then is an instance of an atmospheric poison acting directly on a mucous membrane producing typhus fever. We have already observed, and shall have occasion to recur to the subject, that atmospheric or marsh miasmata, acting on another portion of the intestinal canal, produces also low fever, with afternoon or evening accessions.

The name typhus fever has been very generally applied, of late years, to designate any fever in which the symptoms at any period assume a low character, without reference to the injury of the viscus or viscera which produces the disease, although daily experience proves that these symptoms arise after manifest injuries of different parts.

A blow is received on the head, by which lesion is produced; an operation according to the circumstances of the case affords relief, but where this relief is either not applied or fails in success, the patient dies with all the symptoms which characterize typhus fever—an extremely quick and feeble pulse, a brown dry tongue, with sordes on the teeth, stupor alternating, with low muttering, delirium, and

unconscious evacuations. After amputation, or bleeding, it occasionally happens that a vein inflames: sympathetic changes in the nervous and sanguiferous systems ensue—the same train of symptoms which occurred in the former case follow, and the patient dies. Here, then, the same set of phenomena occur which take place when the poison of the atmosphere, or the exhalations of marshy or foul districts, attack different structures of the human body—the symptoms, which arise early when the disease proves severe, late when the patient is to recover, still receive the same name of typhus. Is there manifest and early headach, with loud delirium, which, when relieved by evacuations, subsides into low muttering, with nervous twitches, great thirst, brown tongue, and trembling throughout the body, the word typhus is used to convey the nature of the fever, although, after death, lymph is found between the membranes, or at the base of the brain, and effusion of the fluid in the ventricles. Is an individual attacked with debility, headach, and diarrhœa, the abdomen full, and giving obscure sensations of pain, or the recti muscles strongly contracted, giving a sense of great hardness to the touch; the tongue dry and red, or loaded in the middle; flushings of heat, particularly in the evening, at which time the pulse is extremely quick; delirium ensuing in severe cases violent, in long cases much less so, and in some cases absent altogether, according, probably, to the degree of nervous sensibility with which the patient is endowed—do these symptoms continue for a considerable time, when the abdomen is ordinarily more painful on pressure, the tongue dry and brown, and the teeth encrusted, the sphincters relaxed, occasional starting of tendons takes place, and death occurs—still, in the common language of medical men in this country, the word typhus is employed to designate the disease, although, on examination, the whole glandular structure of the small intestines is in a state of fungoid ulceration, and in most cases the brain and its membranes, to whose impaired functions and subsequent lesion the disease in the former case is to be attributed, are to all appearance unimpaired and healthy.

If there were wanting other proofs of the action of atmospheric or animal poisons uniformly on different structures, the consideration of the measles and small-pox would be sufficient to excite reasonable belief of their existence. The severity of the symptoms of measles is in direct proportion to the severity of the inflammation of the membrane which lines the bronchia, nares, and eyelids; an affection of the membrane which covers the body occurring after the first mentioned symptoms have commenced, and showing that to the mucous structure is confined the action of the poison.

In Dr. Home's *Clinical Experiments*, published 1778, is an account of a dissection, which places the seat of the disease in a very clear point of view.

"When the body was opened, the trachea

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was found filled with matter of a purulent appearance, but no preternatural membrane or ulceration were seen. The internal membrane of the trachea was much inflamed, but no eruption or pustles were found on it, nor was it preternaturally thickened. On cutting into the substance of the right lobe of the lungs, a considerable quantity of blood flowed from the incised vessels and cellular membranes, and some of the smaller ramifications of the bronchi emitted the same purulent matter before mentioned. On cutting the left lobe the blood-vessels were much less filled with blood, but the smallest visible ramifications of the bronchi seemed every where filled with purulent matter. The lungs had no adhesions, and externally were of a natural colour. About two or three ounces of water were found in the pericardium. Abdominal viscera natural."

It is to be remarked, likewise, that the poison of this disease, as well as of small-pox, whether introduced into the circulation by absorption, by the lungs, or from a wound, acts equally as the known mineral and vegetable poisons on the same structures, and that the symptomatic excitement of the nervous and circulating systems is in exact proportion to the violence of the injury to the structure attacked.

There is another disease which is known to arise in warm and marshy situations, and in rainy seasons in hot climates, and has destroyed by its virulence numerous armies, and depopulated cities—epidemic dysentery. That this disease arises from an atmospheric poison has long been confidently believed; and observation shows that such poison acts directly on the mucous membrane of the large intestines, which, after death, is found covered with innumerable ulcerations. These ulcerations being situated in a portion of the bowels not so immediately connected with the functions of secretion and nutrition as the small intestines, their lesion does not probably give rise to such severe sympathetic affection of the nervous system as is found to occur frequently when the miasma attacks the latter bowels. (See Sir J. Pringle, *Diseases of the Army*; Sir G. Baker de *Dysenteria Epidemica*, 1762; Boneti *Sepulchret. art. Dysenteria*, Morgagni.)

"There is an old observation," says Sir John Pringle, (*Dis. of Army*, p. 232,) "that such seasons as produce most flies, caterpillars, and other insects (whose increase depends so much on heat, moisture, and consequently upon corruption,) have likewise been the most productive of dysenteries; and, lastly, that the infection is evidently communicated by the faces of those who are ill, as we have already shown."

The next passage is a very strong proof of the immediate effect of the miasma on the membrane of the bowels after being absorbed by the lungs and carried into the circulation; but Sir J. Pringle was too much infected with the doctrines of the humoral pathology not to explain it according to such preconceived opinions.

"For the dysentery," he says, "may proceed from two causes, different in appearance, but in effect the same: one from acrimony generated within the body, and the other from foul steams, which, being received into the blood, *act as a ferment*, and suddenly produce the same disorder that arises slowly from an internal cause. A remarkable case once occurred to me of a person seized with true dysentery, by making experiments upon human blood, become putrid by standing some months in a close phial."

It may here be suggested that, if the poison of the atmosphere acts like known animal or vegetable poison upon living structures, it ought to affect all persons equally within its reach, and that its attack should be simultaneous, and nearly equally severe in all cases. On the other hand, that the power of absorption of the same quantities of air, loaded with vapour of different density, is equal in all individuals, must be proved; and next we must remember that there is no law of living matter more certain than the power it possesses of becoming accustomed to external and foreign impressions, and that, indeed, scarcely a better definition of life can be given than the power of the body to remain unchanged in a temperature raised greatly above, or diminished much below, its natural heat.

On this point it will be well to recal to the reader the remark of Dr. Lind. "Nevertheless," says he, "it is worth observing that, without suffering by it, we may take poison in such quantities as, were we not previously accustomed to it, would be instant death. It is precisely the same with those who constantly reside in countries replete with fenny miasmata: they thereby become so much the less obnoxious to be affected by them. Hence too it is that persons newly arrived from Europe sooner fall sick than those who had been some time in garrison at Calcutta."—(Lind. B. Remitt. Fev. p. 38.)

Again, individuals who are weakened by illness, by large evacuations, or by the constant influence of depressing passions, have been observed to take fever more readily than those who are in robust health, using full diet and constant exercise. These last promote the growth of the body. It is found by the experiments on poisons that their absorption, and in disease the introduction of remedies, is more rapid in debilitated than in robust bodies. This, then, will still further favour the analogy between the effects of known poisons and those believed to exist in the atmosphere.

Proceeding a step farther, we find that there are certain conditions of the body predisposing and even necessary to the reception of epidemic miasmata, but that still these poisons act on one definite structure.

(To be continued.)

From the London Medical Gazette.

PHYSIOLOGICAL MEMOIR ON THE

BRAIN.* By M. MAGENDIE. Read before the Royal Academy of Science, June 16, 1828.

Since the blind respect which the ancients entertained for the dead has given place to an ardent desire to become acquainted with the organization of the animal frame, anatomical science has been elevated to a higher degree of perfection by the successive labours of eminent men. Anatomists now, who in their ardour still hope to find some part not observed before, some structure yet undescribed, are fain to proceed microscope in hand. This circumstance alone suffices to show the perfection at which the topography of the human body has arrived.

The investigations which I have long pursued, with regard to the nervous system, have led to my discovering a new element of our organization—not one of those which requires minute research to be detected: on the contrary, the element of which I speak is so apparent, that it has only escaped heretofore from the belief that no part of the body, however minute, could have escaped the active investigations of anatomists.

I have ascertained that there exists, in the cavity of the cranium and spine, a liquid, in the midst of which is immersed the brain, spinal marrow, and origins of all the nerves. This liquid, which belongs to the most perfect state of health, and the quantity of which extends to several ounces, is too obvious not to have been noticed and even mentioned in several works; but then its presence was attributed either to disease or to changes which had occurred after death. You may conceive my satisfaction on determining so important a fact. A host of conjectures presented themselves to my mind:—was this liquid the *animal spirits* of ancient writers—the *nervous fluid* of which certain physiologists still speak? Doubtless had the discovery been made some fifty years ago, we should have had a brilliant hypothesis founded upon it: but such is not now the progress of science—experience is preferred to the most ingenious systems; and some observations on nature, and some experiments, are all that this memoir will contain.

It was necessary to begin by naming my liquid—for a name is a great matter even in anatomy. I called it the *cephalo-spinal* or *cephalo-rachidian*, because it is found both in the head and cavity of the spine. I next had to determine the exact quantity, and I ascertained that, in an adult man of middle stature, and in the enjoyment of all his faculties, moral and physical, there were about three ounces; in women, under like circumstances, the quantity is greater. It will be seen by and by that this is no advantage. In old persons the quantity of the liquid is still more considerable, and may extend even to six or seven ounces; but then the faculties, of both body and mind, are generally much impaired.

* Condensed from Le Journal de Physiologie.

The situation occupied by this fluid is worthy of remark: it forms round the brain and spinal marrow a layer of different thickness at different points; at the neck it is four or five lines; at the loins it is more than an inch; in the brain generally one or two lines, but in certain situations and certain cases nearly an inch. Do not these facts militate strongly against a famous system in which it is pretended to determine the most minute circumstance concerning the volume and conformation of the brain by the formation of the skull? If there exists, as cannot be doubted, a layer of fluid between the cranium and the brain, and if this layer may have several lines in thickness, how can we judge of the dimensions of the brain by those of the cranium?—and how be sure that the elevations or depressions of the surface of the head correspond to those of the brain? The study of the layer of this which covers the brain, led me to a singular and very unexpected fact with regard to the volume of this organ.

We look upon the dimensions of the brain as not subject to variation, because we think that it fills exactly the cavity of the cranium, and because we do not see the head become emaciated or plump with the other parts of the body: but nothing is less correct. I ascertained that the brain follows the other organs with regard to the change of its volume.

In all diseases of a certain duration, where the body wastes much, the brain undergoes a similar diminution; and the convalescent who can scarcely walk, and who attributes his weakness to the almost entire disappearance of the muscles of his limbs, might with as much reason attribute his moral weakness to the diminution in the size of the brain. I have ascertained, besides, that in proportion as the wasted limbs regain their former dimensions, the brain also recovers that which it had lost. Thus it appears that one of the uses of the cephalo-spinal liquid is to replace the brain as often as it diminishes in actual volume. It fulfils the same offices in the instances of partial diminution, as I was able to determine in individuals who, during many years of their life, had had the arm or leg contracted and immoveable. In this case a fifth or fourth part of one cerebral lobe had disappeared; a large depression had formed on the surface of the organ, and this was occupied by the cerebro-spinal liquid, so that the cranium was always full. After having made out the physical uses of the liquid, I wished to ascertain whether it exercised any influence on life. This could only be done by experiments on the lower animals, which have the cerebro-spinal liquid, but in much less proportion than man. My first trial was upon a fox. He was old and fierce. By means of a little puncture made in the neck he lost all his cerebro-spinal liquid in a few minutes. The effect was very striking. This animal, which had been ferocious but a moment before, became calm all at once; he no longer attempted to bite, and indeed made no movement. Seeing him in this disposition, I

made him be set at liberty in the garden; but he lay down on the spot, and did not stir till next morning. He then attempted to get up, and in the course of the day made several steps with some confidence. At the end of thirty-six hours he again attempted to bite and to make his escape. I then made a fresh puncture in his neck, and I was able to satisfy myself that the cerebro-spinal liquid had been completely renewed.

These inquiries led me to examine, with more attention than I had previously done, a disease of very young infants, in which a pouch, filled with water, exists at the lower part of the spine, at the place where the natural liquid is in large quantity; and I discovered that the liquid which we regard as the morbid product is nothing more than the natural liquid, which has distended its envelopes and formed a hernia externally. When this bag happens to burst, the liquid escapes, and death speedily follows; probably because the aperture remaining open the fluid cannot again collect and protect the brain and spinal marrow by its presence. Thus it appears that in man, as in the lower animals, the contact of this liquid with the surface of the brain is of great importance to the perfection of the nervous functions, and even to life.

But is it merely as a fluid that this is of so much use, or is its functions at all dependent upon its chemical constitution? To determine this question I made an experiment, in which, after having extracted the cerebro-spinal liquid of an animal, I supplied its place with an equal quantity of distilled water at the same temperature, and I found with surprise that the animal became extremely agitated: its movements were perverted—it appeared to have entirely lost its usual instincts and habits. All these phenomena ceased when I allowed the water to escape. To judge if the temperature of the liquid had an effect on the nervous functions, after having allowed the portion which I had previously extracted from the animal to become cold, I re-introduced it into the cavity which it had occupied: immediately the animal was seized with general trembling, analogous to what precedes intermittent fevers. It is, therefore, not impossible that this experiment may throw some light on the cause of the cold stage in fever.

I conclude from the facts and experiments which I have detailed, and from many others already published, that the cephalo-spinal liquid influences the functions of the nervous system, first, by its contact with the surface of the brain and spinal marrow; secondly, by its chemical nature; thirdly, by its temperature;—and thus that this liquid must be ranked along with the blood, lymph, &c. from its utility in the animal economy.

But I had a much more important object than that which we have considered: I had to study the influence of this liquid upon the intellectual faculties of man. That I may be the better understood, it is necessary to say a few words on the formation of the brain. This is divided into two portions: one large,

and occupying the upper part of the cranium—viz. the *brain* proper; the other small, and placed beneath—viz. the *cerebellum*. The exterior of the brain presents a great number of rounded protuberances, varying in different individuals and separated by furrows. This disposition has led some to believe that the brain is only a large membrane folded upon itself. Numerous cavities are found in the valve of the cerebrum. It is there most probably that some of the mysteries of nervous actions and intellect are accomplished. Can it be believed that these cavities, rendered so important by the phenomena there produced, have been, and still are, denominated *ventricles*—little bellies? Is it not high time to discard this frivolous appellation from the language of anatomy? However this may be, the nomenclature of the parts contained within the cavities of the brain offer this remarkable circumstance—that many of them have names indicative of hydraulic uses: thus we have the terms *aqueduct*, *funnel*, *valve*, and even *bridge*.

Most of these names have descended to us from distant periods, and we are accustomed to look upon them as the remains of some ancient system, which has crumbled beneath the accumulation of time and science. The old physicians believed that the ventricles of the brain were filled with water, which, in certain cases, escaped by the nose: a belief which passed to the vulgar, among whom we still meet with it. These ideas are looked upon as erroneous by modern anatomists, according to whom the ventricles of the brain, in its healthy condition, do not contain any water, but a light and invisible vapour, which they have not hesitated to represent as the immaterial essence presiding over the acts of intelligence. Nevertheless, when we open the brain, we almost always find the ventricles filled with a limpid fluid; but the present doctrine regards this as the product of the disease producing death.

Having acquired the data which I have already mentioned, with regard to the liquid which surrounds the brain and spinal marrow, I have been led to think that the water which is so frequently found in the cerebral cavities might be the same which is found on the surface of the brain; from which it would follow that its presence in the ventricles was natural, according to the opinion of the ancients, and not a morbid product, as is at present supposed.

It will be perceived that, in order to confirm this idea, it was absolutely necessary that there should exist an opening by which a communication might be established between the exterior of the organ and its internal cavities; and yet no such opening was known. I did not, however, despair; and after some researches, made at the termination of certain diseases, I at last found an aperture two or three lines in diameter, completely hidden by a lobe of the cerebellum, and forming a true *entrance to the cavities of the brain*. I represented this opening in a fine wax cast which I

gave to the academy, and which is now exhibited.

This fact once established, it became mechanically necessary that the cerebro-spinal liquid should enter into the cavities of the brain and fill them, for they communicate with each other. I had no difficulty in verifying this inference in the bodies of persons destroyed by accidents, and which, in fact, showed me the liquid filling the cerebral cavities, &c.

This discovery gave me the key to the hydraulic nomenclature of which I have spoken. I perceived that these pretended ruins of ancient doctrines were simply the figurative but just designation of an assemblage of organs in full activity, and fulfilling their singular functions in the brain of those very persons who denied their existence. In fact, the *valvula Vieusseni* of the cerebellum fulfils, to a certain extent, the office of a valve. The *aqueduct* has really the functions which this name implies, as it transports the liquid from the fourth to the third ventricle; the *infundibulum*, or *funnel*, carries it to the pituitary gland; and lastly, the *pons*, or *bridge*, is really an arcade, placed transversely in the direction which the fluid observes; it is situated, not over, but beneath the current, which it traverses, and, to give an idea of it, I cannot do better than call to mind the gigantic enterprise which is now in progress under the Thames.

This, then, is a complete restoration of the hydraulic apparatus presented by the brain. Without being an exclusive admirer of ancient times, I must remark that, in this instance at least, our predecessors had observed more accurately than we had done. Modern anatomists, however, have this merit—that they respected the names, although they regarded them as false and illegitimate; and in this they were wise, as people sometimes are, without suspecting it.

The liquid which fills this cavity is not in repose; on the contrary, it undergoes constant agitation, by the effect of a kind of flux and reflux resulting from respiration. Thus, at the moment we inhale, the liquid flows out in part from the cerebral cavities and passes into the spinal canal; while, on the other hand, at the moment of expiration the liquid re-enters these cavities, and passes by the conduits above mentioned, particularly the *aqueduct*, which gives passage to the fluid now in one direction, and now in the opposite.

The mechanical cause of this flux and reflux is very simple—it depends upon the alternating turgescence of the nerves of the spine under the influence of respiration. This movement of the liquid is arrested, or much retarded, by compressing the abdomen. We may remark that this is one of the effects of girdles, and serves to explain how their use becomes dangerous, or even insupportable, when the pressure is too great.

In studying the passage of the fluid by the *aqueduct*, I believe I have discovered the probable use of the pineal gland. I look

upon it as a *plug* destined to open and shut the aqueduct, over the anterior opening of which it is situated. Two large veins are placed and fixed upon the gland; these vary in size—sometimes they swell greatly, and at others are nearly empty. It is inevitable, from the relative position of the parts, that the moment the veins swell they must press down the pineal gland; and this cannot yield nor descend without shutting the entrance of the aqueduct to a greater or less extent. Now, as one of the constant effects of crying, of exertion, anger, and all violent passions, is to swell the veins of the head, and particularly those which press upon the pineal gland, it follows that, in these different conditions, the entrance of the fluid into the ventricles is intercepted, or at all events impeded. The use, then, or, more correctly, one of the uses of the pineal gland, would appear to be that of regulating mechanically the flow of the cerebro-spinal liquid through the aqueduct.

Such an investigation was extremely difficult, and if there were some hopes of ascertaining some truths of great interest, the chances of errors were much more numerous. In order to avoid wandering as much as possible, I took two extreme points, reserving the intermediate gradations for future opportunities. I first ascertained the quantity of the cerebro-spinal fluid in persons endowed with reason; secondly, in idiots; and thirdly, in the insane.

In idiots (I speak of those who had accidentally become such, not of idiots from their birth, in whom there exists some vice in the organization of the nervous system) there is a considerable quantity of this fluid: it occupies the surface of the brain, and there forms a thick layer; it distends the cerebral cavities, and displaces all the parts which are to be found there, particularly the pineal gland, which no longer has its natural situation, and thus no longer fulfils the office I attribute to it. The aqueduct, in consequence, presents a considerable enlargement. It is in such cases that we find from six to seven ounces of cerebro-spinal liquid, and the same occurs in the imbecility of old persons.

The insane also have a large quantity of liquid, but it does not accumulate at the surface of the brain. Whatever be the nature of the enlargement, monomania, hallucination, melancholy, &c., the ventricles are always very much distended and enlarged by the fluid, of which three ounces are sometimes found in these cavities alone.

Persons who retain their reason to the time of their death generally have less than an ounce of serosity in the ventricles. Thus it is easy to distinguish the brain of a madman, or an idiot, from one which is sound.

I had once to examine the brain of a man of genius who died at an advanced age, but still retaining his faculties entire: the entire quantity of cephalo-spinal liquid did not amount to two ounces, and the cavities of the brain scarcely contained a drachm.

It appears, then, to be established by these

general results, that the development of the faculties of the mind is in the inverse ratio of the quantity of cephalo-spinal liquid; and this is, to a certain extent, easily understood, since the volume of the fluid cannot increase but at the expense of the cerebral mass, and, in general, superior intellects are found connected with voluminous and well-developed brains. But those who have a large head and high forehead, and who are disposed to be somewhat vain upon the subject, ought to feel some anxiety about the relative proportion of their cerebro-spinal fluid. I may add, that not only ought this liquid not to be too abundant, but that its movements ought to be free in its channels. I lately found in the brain of an old female singer, who, after a brilliant career on the stage, died idiotic at the Salpêtrière, an obliteration of the opening by which the liquid enters the ventricles; and as the brain of this woman presented no other appearance which could explain her mental disease, I am led to regard the above as the cause of her idiotism.

Such are the results of my inquiries, but much is still wanting to complete the history of the cerebro-spinal liquid. I have collected many facts, and believe that I have arrived at many interesting conclusions, but they require to be matured.

From the *Philosophical Magazine and Annals of Philosophy*.

ON THE INFLUENCE OF THE AIR IN DETERMINING THE CRYSTALLIZATION OF SALINE SOLUTIONS. By THOMAS GRAHAM, Esq., A.M. F.R.S.E.

The phenomenon referred to has long been known, and popularly exhibited in the case of Glauber's salts, without any adequate explanation. A phial or flask is filled with a boiling saturated solution of sulphate of soda or Glauber's salt, and its mouth immediately stopped by a cork, or a piece of a bladder is tied tightly over it, while still hot. The solution, thus protected from the atmosphere, generally cools without crystallizing, although it contains a great excess of salt, and continues entirely liquid for hours and even days. But upon withdrawing the stopper, or puncturing the bladder, and admitting air to the solution, it is immediately resolved into a spongy crystalline mass, with the evolution of much heat. The crystallization was attributed to the pressure of the atmosphere suddenly admitted, till it was shown that the same phenomenon occurred, when air was admitted to a solution already subject to the atmospheric pressure. Recourse was likewise had to the supposed agency of solid particles floating in the air, and brought by means of it into contact with the solution; or it was supposed that the contact of gaseous molecules themselves might determine crystallization, as well as solid particles. But although the phenomenon has been the subject of much speculation among chemists,

it is generally allowed that no satisfactory explanation of it has yet been proposed.

In experimenting upon this subject, it was found that hot concentrated solutions, in phials or other receivers, might be inverted over mercury in the pneumatic trough, and still remain liquid on cooling; and thus the causes which determine crystallization were more readily examined. For this purpose, it was absolutely necessary that the mercury in the trough should be previously heated to 110° or 120° ; for otherwise that part of the solution in contact with the mercury cooled so rapidly, as to determine crystallization in the lower part of the receiver long before the upper part had fallen to the temperature of the atmosphere. In such cases, crystallization beginning on the surface of the mercury, advanced slowly and regularly through the solution. Above, there always remained a portion of the solution too weak to crystallize, being impoverished by the dense formation of crystals below. It was also necessary to clean the lower and external part of the receivers, when placed in the trough, from any adhering solution, as a communication of saline matter was sometimes formed between the solution in the receiver and the atmosphere without. When these precautions were attended to, saline solutions over mercury remained as long without crystallizing as when separated from the atmosphere in the usual mode.

Solutions which completely filled the receivers when placed in the trough, allowed a portion of mercury to enter, by contracting materially as they cooled. A bubble of air could thus be thrown up, without expelling any of the solution from the receiver, and the crystallization determined, without exposing the solution directly to the atmosphere.

The first observation made was, that solutions of sulphate of soda sometimes did not crystallize at all upon the introduction of a bubble of air, or at least for a considerable time. This irregularity was chiefly observed in solutions formed at temperatures not exceeding 150° or 170° , although water dissolves more of the sulphate of soda at these inferior temperatures than at boiling heat. Brisk ebullition for a few seconds, however, rendered the solution upon cooling amenable to the usual influence of the air. In all successful cases, crystallization commenced in the upper part of the receiver around the bubble of air, but pervaded the whole solution in a very few seconds. A light glass bead was thrown up into a solution without disturbing it.

It occurred to me, that, since the effect of air could not be accounted for on mechanical principles, it might arise from a certain *chemical* action upon the solution. Water always holds in solution a certain portion of air at the temperature of the atmosphere, which it parts with upon boiling. Cooled in a close vessel after boiling, and then exposed to the atmosphere, it reabsorbs its usual proportion of air with great avidity. Now this absorbed air appears to affect in a minute degree the power of water to dissolve other bodies; at least a

considerable part of it is extricated upon the solution of salts. When a bubble of air is thrown up into a solution of sulphate of soda, which has previously been boiled and deprived of all its air, a small quantity of air will certainly be absorbed by the solution around the bubble. A slight reduction in the solvent power of the menstruum will ensue at the spot where the air is dissolved. But the menstruum is greatly overloaded with saline matter, and ready to deposit; the slightest diminution of its solvent power may therefore decide the precipitation or crystallization of the unnatural excess of saline matter. The absorption of air may in this way commence and determine the precipitation of the excess of sulphate of soda in solution.

Here, too, we have an explanation of the fact just mentioned, that solutions of sulphate of soda which have *not* been boiled, are less affected by exposure to the air than well-boiled solutions; for the former still retain the most of their air, and do not absorb air so eagerly on exposure as solutions which have been boiled.

But the theory was most powerfully confirmed by an experimental examination of the influence of other gases, besides atmospheric air, in determining crystallization. *Their influence was found to be precisely proportionate to the degree in which they are absorbed or dissolved by water and the saline solutions.*

To a solution of sulphate of soda over mercury, which had not been affected by a bubble of atmospheric air, a bubble of carbonic acid gas was added. Crystallization was instantly determined around the bubble, and thence through the whole mass. Water is capable of dissolving its own volume of carbonic acid gas, and a solution of sulphate of soda as strong as could be employed was found by Saussure to absorb more than half its volume.

In a solution of sulphate of soda, which was rather weak, both common air and carbonic acid gas failed to destroy the equilibrium; but a small bubble of ammoniacal gas instantly determined crystallization.

When gases are employed which water dissolves abundantly, such as ammoniacal and sulphurous acid gases, the crystallization proceeds most vigorously. It is not deferred till the bubble of gas reaches the top of the receiver, as always happens with common air, and frequently with carbonic acid gas, but the track of the bubble becomes the common axis of innumerable crystalline planes, upon which it appears to be borne upwards; and sometimes before the ascent is completed, the bubble is entangled and arrested by crystalline arrangements which precede it.

The number of gases which are less soluble in water than atmospheric air is not considerable; but of these, hydrogen gas was found to be decidedly least influential in determining crystallization.

Minute quantities of foreign liquids soluble in water likewise disposed the saline solution to immediate crystallization, as might be expected, and none with greater effect than al-

cohol. It is known that alcohol can precipitate sulphate of soda from its aqueous solutions. The soluble gases I suppose to possess a similar property.

These facts appear to warrant the conclusion, that air determines the crystallization of supersaturated saline solutions, by dissolving in the water, and thereby giving a shock to the feeble power by which the excess of salt is held in solution.

* Since the foregoing observations were printed, the author has perceived that M. Gay-Lussac, in his paper on crystallization, (*Ann. de Chim.* tom. lxxxvii.) had distinctly thrown out the same theory as a conjecture, although the circumstance is not noticed by any systematic chemical writer. But as M. Gay-Lussac brings forward no experimental illustration of the theory, and indeed adduces one experiment as unfavourable to it, the experimental confirmation of the theory is novel, and was certainly required.

From the London Medical and Physical Journal.

OBSERVATIONS ON FEVER. By W. F. Bow, M. D.

I had the honour of appearing in the numbers of your Journal for March, April, and May, as the author of some speculations on the nature of fever.* I there hazarded an opinion regarding the heat of the surface. I said that, during the first stage, the products of secretion throughout the system were imperfectly secreted, in consequence of the impairment of nervous energy; that these imperfect products at length irritated the extremities of the sentient nerves, and thus caused the reaction which introduced the second stage; that, owing to the great sensibility of the skin, reaction first manifested itself there by a sense of heat; and that the preternatural heat of fever depended on such irritation, and was not caused by increased vascular action.

My object in now addressing you is to call the attention of your numerous readers to this point: many of them may have an opportunity of watching the progress of febrile attacks in their own persons during the autumn: if so, I am confident they will find that heat of surface, more or less, invariably precedes increase either of force or frequency of pulse. I begin to suspect that the contrary opinion is the offspring of theory rather than of clinical observation, and that the general belief in this doctrine is the chief obstacle in our research into the nature of fever. As an instance how apt we are to be misled by preconceived ideas, or by the authority of great names, Dr. Currie, throughout his "Reports," never doubts but that the heat of the surface in fever is caused by increased vascular action. He believes it to accumulate first about the heart, and to extend to the surface; yet he commences his work with a case which shows evidence to the contrary. This case is the more to be depend-

ed on, as it is reported by the patient himself, Dr. Wright.

"By my attention to the sick man, I caught the contagion, and began to be indisposed on the 5th of September; and the following is a narrative of my case, extracted from notes daily marked down, &c. September 5, 6, 7.—Small rigours now and then; a *preternatural heat of the skin*; a dull pain in the forehead; the pulse *small and quick*."

Dr. Good considers heat to be the result of increased action. "For as the former [heat] is the result of increased action, till such increased action takes place, the heat, as in the first stage of the paroxysm, may continue even below the natural standard." Yet this diagnosis of mild remittent fever runs as follows: "The patient complains of drowsiness, and feels languid; is occasionally chilly, and afterwards flushed, but without perspiration; for the skin is *hot and dry*, the thirst considerable, commonly with nausea and a total loss of appetite. In the course of the day, but usually towards the evening, the *pulse quickens*, the *heat increases*, and at length terminates in sweat."

Dr. Good also illustrates the autumnal remittent with a case, in which I suspect heat of skin existed, with a *feeble* pulse.

"In the case of a young lady, in her seventeenth year, whom I lately attended, the attack was slight, and no serious evil was at first apprehended. The pulse was about ninety in a minute, and rather *small*; the bowels were relaxed, the motions bilious, and the stomach suffered from nausea. A gentle emetic seemed to afford some relief to the stomach, and a dose of rhubarb and calomel to the bowels; but the *fever* continued with a daily and increasing exacerbation, for the most part at mid-day, or soon after. The stomach again became irritable and sick, and the sickness was again connected with diarrhoea; but the stools were colourless and watery, and nothing was rejected from the stomach but the diluent food that was swallowed. The skin was now *very hot and dry*; the pulse from a hundred to a hundred and twenty strokes in a minute."

Now, in the first part of this case, although the heat of the skin is not mentioned, there must have been considerable heat, because Dr. Good says "the fever continued." Without heat greater than natural, the disease could not have been recognised as fever; and a pulse ninety, and smaller than natural, certainly cannot indicate increased action of the sanguiferous system.

From the Edinburgh Medical and Surgical Journal.

OBSERVATIONS ON FISTULA LACHRYMALIS, and the recommendation of a more simple plan of Operating. By EDWARD THOMPSON, Member of the Royal College of Surgeons, London.

Before the plan recommended by Mr. Ware for the cure of *fistula lachrymalis* was prac-

* Vide Journal of Foreign Medicine, Vol. I. page 502, and Vol. II. page 16 and 102.

* Study of Medicine, vol. ii. p. 40.

tised, the operation might be looked upon as a rude one. The method pursued by Pott was any thing but a surgical proceeding; and although the gut was gradually introduced through the natural canal, it possessed little to recommend it over the methods employed before his time. The simple operation of Anel,—that of passing a probe through the upper puncture, and overcoming the contraction by carrying it along the natural passage into the nose, which some have incorrectly called Mr. Travers's method,—was either not known or else forgotten. This method, although superior to any of the operations then in use, soon ceased to be employed even in the country in which it was proposed, probably from the difficulty of performing it, or from a wish to resort to more severe means, which in the infancy of surgery were always preferred.

Of the operation by Mr. Wathen, which only differed from the old manner in the tube being inserted through the natural canal, instead of the bone, Mr. Ware has left us no very favourable character. The trouble experienced in abstracting these tubes, as after a longer or shorter period they either became filled with hardened mucus, or suffered displacement, appears to have caused more annoyance than any of his operations. That a method which so often failed in effecting a permanent cure, and was so difficult to remedy after it had failed, should have been immediately deserted after the plan by Ware became known, is not surprising. A dead substance can never be accommodated to a living one for any length of time, without undergoing some change either in situation or otherwise, which requires its being reapplied or adjusted. This mode, with slight modification, has been revived by Dupuytren, and has found an advocate in Mr. Teale. The cases are interesting; but it remains to be proved how far they will be eventually successful. Mr. Ware had to remove several of Wathen's tubes a length of time after their introduction, in consequence of unpleasant effects arising from their presence. I do not know that they have, as foreign bodies, ever excited irritation or nervous pain; but Le Dran states that he has known a bougie kept in the canal too long cause in certain habits distressing symptoms, which it is not improbable may occasionally occur after the introduction of permanent metallic tubes. Cases of the most violent *tic douloureux* are on record, caused by the presence of foreign substances under the integument. Although the example of Dupuytren may go far in recommendation of the measure, it probably will never become general, as the advantages are greatly overbalanced by defects. The practice pursued by Baron Larrey,—the use of cat-gut,—had been fully tried before his time and appreciated. It is now nearly laid aside.

The mode lately proposed of puncturing the sac alone, and forming a small fistulous opening externally, without interfering with the duct, may succeed in some cases, but with others it will not. Mere inflammation of the sac and duct does not constitute true fistula.

Matter may form as a consequence of inflammation, and it may be necessary to evacuate it, or it may burst forth; but the thickening of the membrane will often subside after such evacuation, and the canal become pervious, if the external opening be not suddenly healed. I have seen this take place in one or two instances, and probably the cases related have been of the like kind. It is difficult to suppose, in the cases alluded to, a total obstruction of the canal to have permanently existed, as the tears in that case would still run over the cheek. It is, however, a method that may occasionally prevent the necessity of opening the canal, which, by waiting a time, would of itself become pervious, the inflammation and thickening gradually subsiding.

The operations, therefore,—for it is unnecessary to allude to those of Garengot, Schobinger, and others,—that deserve the greatest attention, are those of Anel, Heister, and Ware. Anel's operation is that followed by Mr. Travers, and consists in not opening the canal to its full size, but merely introducing a small probe through the superior puncture. This operation is defective, because, as the opening is very small, a slight inflammation, excited by whatever means, will suffice to close it up again, and therefore a recurrence to the operation will frequently be necessary. This is not mere supposition; it is grounded in fact. It is also more difficult to perform than that of Mr. Ware, which stands in the way of its universal adoption, although by a little attention the difficulty is surmounted. Heister preferred this method with certain modifications, and thought it applicable to nearly every case; but it is not easy to set aside the stigma that has been attached to it, that of its being little better than a palliative measure. The operation, then, that appears the freest from objection is the one proposed by Mr. Ware. Any one who will take the trouble to look into the history of this disease will see, that the mere opening of the natural canal, and the introduction of substances to prevent its closure, did not emanate from either Pott, Wathen, or Ware. On the Continent it had been practised many years before Pott published his observation. Petit used to pass a bougie through the canal, and others after his time did the same. But bougies or probes were introduced generally after an external opening had been formed by ulceration, and therefore differed from the methods pursued by the authors above named, and particularly Mr. Ware's. The passing of a probe through the duct, and the subsequent introduction of a style, were peculiarly his own, and was certainly an improvement in the treatment which has not been bettered.

It may be interesting to inquire,—if it be allowed that the treatment is one which may be depended upon,—whether Mr. Ware's mode may not be improved by the steps of the operation being shortened and more simplified. In the usual way of operating the sac is first opened by a knife, the probe and style following each other in succession. The necessity of making a triple operation is not very evi-

dent. All that is required is the introduction of a body to prevent the agglutination of the passage, which body might be carried down at once with the probe employed to clear the obstruction. The opening through the skin need not be larger than the style; indeed it is an advantage to have it not so. An unseemly scar is what all wish to avoid; and it was one recommendation of Mr. Ware's method, that, in this respect, it surpassed all prior operations in which an opening was made. The moderns pay less attention to this particular than Mr. Ware did. Dupuytren plunges a knife, such as is delineated in Averill's work, fully into the canal, making an opening much larger than there is occasion for; and except it be, as of old, to get a peep into the sac, which Le Dran thought of the greatest consequence, or to evacuate the contents, which would find their way without such precaution, the necessity for it is not apparent. To insert a tube into the channel is bad surgery, as experience has proved; and, therefore, the opening is larger than is required for a style, which M. Dupuytren's method will at last come to. One object in performing *fistula lachrymalis*, well known to those conversant in the operation, is to have the incision in a direct line with the longitudinal direction of the duct. In the usual way of proceeding this is sometimes omitted, and the steps of the operation impeded by it, and the patient put to additional pain. This admits of ready remedy by instituting a mean by which the apertures in the skin, sac, and canal may be made simultaneously. Heister informs us that a surgeon of Hamburgh was in the habit of plunging an instrument at once through the skin, sac, and *os unguis*, into the nose, to lessen the pain and hasten the operation. He gives a view of the instrument, which appears better fitted to knock a man down than to complete a delicate operation; yet, nevertheless, the principle deserves attention.

Without being aware of this operation, I was struck, after opening a fistula a short time since in the common way, with the idea of the practicability of such a measure, and its advantages over the common methods. The instrument which I propose for effecting the end consists merely of a steel probe, five inches long, with a trocar point, which probe is admitted into a silver cannula, of the size of a common style, and shaped like it, with a diagonal head. This cannula is prevented falling off, when the instrument is held perpendicularly, by the usual spring, and a slight enlargement of the head of the probe, or cutting part of it. There is a projection to keep the cannula in its place, so that it may not run up the probe on being introduced. The slightest force is sufficient to disengage the probe after the tube has been introduced fully into the lachrymal canal, in which it is intended to remain instead of a style. The manner of its introduction is simple. Holding the cutting probe, armed with the cannula, in the right hand, the situation for penetrating the lachrymal sac being ascertained, the skin is stretched by a finger of the left, and the instrument is at

once to be plunged down through the duct into the nose up to the head of the cannula, which is to be immediately disengaged from the probe and left there. By this method of operating much time is gained, and less pain inflicted, two requisites which, in every department of surgery, and in all operations, are very desirable.

The cannula ought to be exactly an inch and three-eighths in length. The cutting or trocar point of the probe must be of necessity short, just sufficient to clear the end of the cannula and effect the requisite opening in the integument, to allow of the free introduction of the instrument into the nasal canal. If the point of the probe were to advance far from the cannula, the floor of the nostril would be wounded before the head of the style had arrived at its situation in the angle of the eye. I need not add that the instrument must be made of fine materials, and accurately fitted. Much strength is not required, nor would the limit of the instrument admit of it.

It may be stated in objection, that to plunge down at once from the angle of the eye to the extremity of the nasal channel requires a knowledge of the direction of the canal more accurate than is required by the other operation; perhaps it may; but this is not ground sufficient for its exclusion. Both operations will be better performed by a good knowledge of the relative situation of the parts; but less pain will be inflicted by a slight variation from the right direction in the one now recommended than in the old operation. It is, however, with this exception, free from several of the faults of the other mode, in relation to which it must be looked upon as only a more simple means of effecting the same end.

From the Transactions of the Medical and Chirurgical Society of London.

AN ESSAY ON A PECULIAR INFLAMMATORY DISEASE OF THE EYE, and on its Mode of Treatment. By WILLIAM WALLACE, M. R. I. A., &c. Read 11th December, 1827.

There are few subjects in pathology which have obtained more attention than inflammation; and yet, perhaps, there are not any in greater need of further investigation. This is owing to the number and variety of the diseases which are classed under this head. It may indeed be said that every morbid affection, which has produced, or which has an immediate tendency to produce alteration of structure, and which is accompanied by an increased accumulation of the circulating fluids in the affected parts, is denominated inflammation. Various attempts have been made at a scientific classification of inflammatory diseases, but it will be admitted by those whose field for observation has been the most extensive, that the number of facts as yet accumulated are insufficient for this purpose; and, in our present state of knowledge, he

will contribute more to the advancement of the pathology of inflammation who will labour to describe with accuracy the individual forms of inflammatory diseases, and their proper mode of cure, than he who will engage in attempts at their generalization.

As inflammatory diseases are so numerous and so varied, it follows that they must require great diversity in their treatment. Yet there are certain general principles of management which are applicable to them all, and it is only in the details, or in the application of these general principles to particular cases, that there exists much variety. It appears to be admitted that the capillary vessels hold an important rank in this class of diseases. That these vessels are, on many occasions in such diseases, in a morbidly distended state, there can be no doubt. There is also as little doubt but that the removal of this state of distention is one most important object in the treatment of inflammations. This is, in fact, so obviously true, that many practitioners appear to have no other aim in their treatment; and when such practitioners have exhausted those measures which are calculated to produce these effects, they have exhausted all their resources. Thus we observe many, who scarcely extend their therapeutics beyond the lancet, the leech, and the purge; and when these have been employed in vain, the case is treated empirically, or is set down as hopeless; or it is left to the resources of nature, who often, on such occasions, performs the office of a skilful physician, and, when allowed to proceed without interruption, sets up processes of restoration which are quickly followed by recovery.

It is true, evacuants will be frequently sufficient for the cure of inflammatory diseases, and they are on many occasions the only remedies required. This is the case in those inflammatory diseases which occur in healthy constitutions in consequence of injury. On other occasions they will be sufficient, because the necessary actions of restoration can be accomplished by the natural resources of the part, after the vessels have been relieved from their preternatural load of fluids. The removal of the state of distention of the capillaries is, however, only one element in the treatment of inflammatory diseases, and often a very secondary element. For it is clear that there can be no accumulation of fluids in a part, unless those properties, or that state of the part, which regulated the admission of fluids into it, shall have been previously altered. This alteration in the properties of the part often constitutes the most important change which has taken place, and consequently demands our particular attention. Therefore, to modify or alter the vital properties of the capillary vessels will be found to be the great object which we are to hold in view, in the treatment of many inflammations.

It must be admitted that, in our present state of knowledge, we are unable to trace any connexion between the known qualities of our remedies, and the powers which they

have of controlling diseased actions of parts, or of the general system. Thus, who can point out the manner in which mercury cures syphilis, or sulphur scabies, or bark ague? Yet, that there exists a certain connexion between the mode of action of the remedy and the altered properties of the diseased parts, there can be no doubt; but our information on this subject must entirely result from experience. Those remedies that possess an action or influence, upon which we can calculate in the treatment of particular diseases, are called specifics, and are, it is to be regretted, very few in number. It is evident, that one great object of those who endeavour to extend the resources of medicine must be to increase our knowledge of such agents as exercise a specific influence over particular diseases; and we may hope that, as our knowledge advances, we shall be able to reduce to some general law of the economy all the insulated facts respecting the specific action of remedies. Such were the views which I entertained on the subject of inflammatory diseases, when the following case occurred to my observation.

Charitable Infirmary, Jervis Street, Oct. 1827.

John Butterly, aged 36 years, a labourer, residing at No. 6, Dorset Street. He had been the subject of fever about eleven weeks ago. The attack lasted fourteen days, and was followed by a relapse, which confined him to his bed for a fortnight. Since then he remained well, until about a month ago, when he was seized by a violent rigour, followed by a hot and sweating stage. A similar paroxysm has returned with regularity, every second day since. His countenance is very pallid, and he is much disposed to profuse perspirations on the slightest exertion. The vision of his right eye is so very imperfect, that he can only distinguish light from darkness by it. The pupil is irregular and contracted. The iris greenish. There is considerable redness of the organ, particularly round the cornea, and on the inner side of the lids. The slightest exertion of the eye greatly increases the redness. He is troubled by frequent flashes of light, which dart across the sight; and often when in the dark, he conceives that he observes a lighted candle. There is not much pain of the eye, or of the parts about it.

This patient was subjected to the influence of bark, for the cure of the intermittent, under which he laboured. As the eye did not appear to attract much attention from him, no remedies were directed particularly for it. It was, therefore, with surprise that I found an improvement in the state of this organ a few days after he had commenced the bark; and before this remedy was discontinued, the eye had regained its natural appearance, and the vision was greatly improved.

Upon considering this case, the resemblance of the ophthalmic disease, to a most obstinate and dangerous form of inflammation of the eye, which I had frequently observed

among those who had laboured under fever, struck me with great force, and induced me to consider whether I might not find in cinchona a remedy for that disease of the eye. I therefore determined on employing it the first opportunity, and I was thus led to ascertain the specific powers of bark over this disease.

I shall now proceed to a description of the disease, and I shall follow this description by a concise recital of those cases, from which I have drawn up the history. When a patient presents himself, labouring under the disease, his aspect is peculiar, and when once seen, is afterwards easily recognised. To those who have witnessed the venereal iritis, it may be observed, that there are many points of resemblance, as well in the style of the countenance, as in the appearance of the diseased organ. There is often that haggard and worn aspect, that sickly, mottled, pallid hue of skin, that sleepy, exhausted, and oppressed appearance of the eye, which is much more easily observed than described. The patient only half opens the lids of the affected organ. They are of a purplish red colour, and tumid. Their subcutaneous vessels are preternaturally enlarged. The vascularity of the sclerotic and conjunctiva is greatly increased. The vessels of the former describe a reticulated zone round the cornea, and those of the latter run in a direction more or less straight to the edge of this membrane, and sometimes appear to pass on the edge. The hue of the redness is peculiar, it is a dark brick-red. The pupil is generally much contracted, and its edge thickened and irregular. The iris is altered in colour, generally greenish, and incapable of motion. There exists a suffused dimness of the cornea, which may be compared to the appearance glass assumes when it has been breathed upon. There is often a turbidness of the aqueous humour, and a pearly appearance of the parts behind the iris may be observed by looking through the pupil. There is great intolerance of light, and a copious, hot, lachrymal discharge. The vision will be found, for the most part, so extremely imperfect that the patient can merely distinguish light from darkness, and he is often tormented by flashes of light, which shoot across his eye, and these occur more particularly in dark places; or he is troubled by brilliant spectres, or by the constant presence of *muscæ volitantes*. There is very considerable pain, which returns in paroxysms, and these are almost always more severe at night. The pain is sometimes referred to the ball of the eye, sometimes to one of the lids, sometimes to the temple or to the circumference of the orbit. It is, one while, compared to the action of a saw on the bones, and on other occasions, to the darting of a sword through the eyeball.

This disease occurs as frequently in the male as in the female. The youngest patient, of whose case I have a note, was 10 years of age, and the oldest 36 years. It seldom attacks both eyes, and the right eye suffers more frequently than the left. Of forty cases,

which I have noted, there were only four who had the disease in the left eye, and only two who had it in both. The general health seldom appears to be much deranged. The tongue is for the most part slightly white. There is often considerable thirst, and the pulse is somewhat accelerated. The bowels are frequently confined, and there is occasionally a disposition to nausea. The disease has occurred more generally in those who have been the subjects of relapse, but the period at which it takes place after the first attack of fever is extremely uncertain. In some it has appeared immediately, and in others not for months. Sometimes a state of apparently full health has intervened between the attack of fever and the commencement of the inflammatory disease of the eye. On other occasions, the general health has seemed imperfect from the time of the fever, until the occurrence of the ophthalmic affection.

This disease presents two very distinct stages. During the first stage there exist amaurotic symptoms alone; and in the second stage, to the amaurotic symptoms are superadded the symptoms of inflammation. The length of time that the amaurotic symptoms exist before the occurrence of external redness, or of the visible symptoms of inflammation, is extremely uncertain, as also the period after fever at which the amaurotic symptoms commence. On many occasions, the amaurotic symptoms, particularly a slight dimness of vision, with *muscæ volitantes*, have commenced at or even before the time of convalescence from fever, and yet the inflammatory stage has not supervened for weeks or even months; while on other occasions the dimness of vision has not commenced for several days, weeks, or even months after the febrile attack, and has then been immediately followed by the symptoms of inflammation. It is to be particularly observed that I have never seen a case in which, upon strict inquiry, amaurotic symptoms more or less strongly marked have not preceded the inflammatory symptoms. This is, in fact, one of the most remarkable characters of the disease. It is also to be noticed that a similar distinction of symptoms is observable during amendment, for it uniformly happens that the inflammatory symptoms subside a longer or shorter time before amaurotic symptoms disappear, and often before they are diminished in severity.

It may be asked, what is the nature of this disease; and what is the texture of the eye primarily affected? That it must be considered an inflammation, according to the common view of this morbid state, there can be no doubt. There is violent pain, there is preternatural redness, there is increased heat, and we may add increase of size. Nor does the morbid action stop at these primary symptoms. The structure of the organ becomes altered. The aqueous humour loses its transparency, interstitial depositions take place into the substance of the cornea. The colour of the iris is changed, the pupil is rendered small and irregular, depositions of lymph occasion-

ally take place on the surface of the iris and at the edge of the pupil. In short, in progress of time, as will appear from the perusal of the cases, there is not a texture of the eye, the structure of which does not suffer materially. But, while the inflammatory nature of the disease cannot but be admitted, it is not so easy to determine what the texture is, which has been primarily affected. Judging from the course of the symptoms, it is the retina which first suffers; but judging from the disease when advanced, it should be called iritis. Does the disease commence in the choroid membrane, and from this extend to both retina and iris, producing in the latter the symptoms already described, and a paralysis of the former? This is, perhaps, the more correct view of the subject, and best suited to an explanation of all the phenomena. If this be the case, the disease may be denominated choroiditis.

This disease bears no resemblance to that affection of the eye which has been described by Mr. Wardrop by the name of rheumatic ophthalmia.* Indeed there is no disease with which it is at all likely to be confounded except the venereal iritis, and the resemblance to it is often so very striking that the one cannot be distinguished from the other, without particular attention to the history of the case and to the concomitant symptoms. So long as the disease is in its primary stage, or in the simple amaurotic state, without any visible symptoms of inflammation, it may be confounded, if attention be not paid to the history, with incipient amaurosis proceeding from other causes.

Although the influence of bark over some rheumatic diseases, which are certainly more or less inflammatory in their nature, is already known, I am sure its utility in the affection under consideration will appear most remarkable, and much at variance with the routine practice of the present day. Indeed had not a fortunate contingency enabled me to make that observation, which led to the discovery of its influence, it is not very likely that any reasoning on the subject would have induced me to employ in a disease so decidedly inflammatory, a remedy so decidedly tonic. Yet now that the observation has been made, the practice does not appear to be irreconcilable to the most enlightened views we possess of the state of the capillary vessels in inflammation. I mean those views which consider that these vessels are in a state of debility. But, if the vessels be in a state of debility in inflammations in general, why should not a remedy calculated to restore tone be generally useful in these inflammations? Can the utility of bark on some occasions and not in others, when the symptoms are apparently the same in the organ affected, be accounted for by the consideration that the general system of the patient is also in a state of different tone, and

consequently in need of the administration of tonic remedies. It must be admitted that this is not unlikely when we reflect on the probable state of the body after fever. Yet the disease has occurred, as may be observed from reading some of the following cases, in persons who appeared at the time to possess full health, and the bark was equally successful in these. In considering this part of the subject it should be remembered that there are several symptoms of the disease which appear to show a state of considerable debility in the vessels affected. Thus the redness of the eye is, as has been noticed, very deep in its hue. It is, as well as the pain of the organ, much increased by a depending position of the head, or by the most trifling employment of the eye, &c.

It is remarkable that the amaurotic symptoms frequently continue for a considerable period after all redness and pain have been removed by the employment of the bark. Indeed, I have seen some patients whose vision had not been perceptibly ameliorated, when the eye had, to all appearance, except the existence of a contracted pupil, recovered a healthy state. Now this is the more remarkable as it might, a priori, be expected that the bark would be suited to the removal of the amaurotic, more than to that of the inflammatory symptoms.

Before the efficacy of bark over this disease was ascertained, it had been uniformly treated, like the iritis from the venereal disease, by depletion and mercury; and with what ill consequences, on many occasions, I have had full opportunities of observing. The reader will find, among the cases, examples which will illustrate this mode of treatment as adopted by others. Those cases of this disease which are related by Mr. Hewson of this city in his treatise on the venereal ophthalmia have been all cured by mercury; but I am decidedly of opinion that there must exist some source of error in his account, for the incurability of the disease by mercury, on many occasions, has been ascertained by several as well as by myself, as also its curability by bark, when the mercurial treatment had failed.

When I commenced the use of bark in this disease, I did not venture to employ it when the inflammatory symptoms were very severe, without preceding its administration by bleeding and purging. But, latterly, whenever a case has presented itself, I have prescribed the bark alone, or simply with such medicines as were suited to the regulation of the bowels; and with the most decidedly good effects. Indeed, I have thought that the abstraction of blood has, on some occasions, considerably retarded the cure; yet cases may occur in which bleeding and purging will be necessary.

I trust the reader will be of opinion, after a perusal of the following cases, that the remedy has a specific influence over the disease. The knowledge of this important fact has been already productive of much benefit in this city, and to what extent it may influence our views

* See *Medico-Chirurgical Transactions*, Vol. X.

of some other inflammatory diseases remains for future investigation. It is only a few years since the power of mercury over another inflammatory disease of the eye was ascertained; and the value of that discovery, not only in relation to the treatment of the peculiar affection of the eye, for which it was employed, but also in relation to many other forms of inflammatory diseases, has been since duly appreciated by the profession.*

The cases which I shall now relate in illustration of the foregoing observations may be classed thus:—1st, Those for which mercury has been employed in vain; 2dly, Those for which this remedy had not been used. In the latter class will be included, 1st, Those cases which were not submitted to treatment until the inflammatory stage had commenced; and, 2dly, Those which were treated during their amaurotic stage.

1. *Cases in which Mercury had been employed in vain.*

Catherine Brennan, æt. 24, admitted into the Charitable Infirmary, January 10, 1827. Increased vascularity of the conjunctival and sclerotic tunics of the right eye, particularly round the cornea. The iris is of a darker colour than that of the left eye. The pupil is contracted, irregular, and motionless. The cornea is dull, and, as it were, contracted in diameter. There is a pearly appearance of the humours at the bottom of the eye. The lids are tumid and red. Their veins are large, and when she looks at any object, she does not separate them more than about two lines. There is much lachrymal discharge produced by every attempt to examine the eye or to look at any object. Pulse 100, and firm; tongue white.

She reports that her vision is very imperfect, that there is considerable pain and heat of the organ, particularly at night, that her bowels are confined, that there is much thirst, and that she has little appetite for solid food; that it is fourteen days since her eye became inflamed, and that the inflammation had been preceded for some time by imperfect vision.

She has been a patient at the Meath Street Dispensary. Bleeding, purging, blisters, and mercurials, to the extent of producing a very sore mouth, were employed without any relief. She had fever about six months ago, since which she has had two relapses, which succeeded each other very rapidly. Since the last relapse, which occurred two months ago,

she has remained in a delicate state of health. (Half a drachm of bark to be taken three times a day in a cup of new milk, and a laxative pill each night.)

January 12th. She complains of sickness of stomach. The vascularity and pain of the eye are diminished. Bowels free.—R. Sulphatis quininae gr. xij.; aquæ fontanæ ℥iij.; acid. sulphur. dil. gtt. iv. M. cochleare magnum ter quotidie.

13th. She complains of pain and oppression in the region of the stomach. Tongue very white. Pulse 120. She reports that she had a shivering fit yesterday morning, and a copious perspiration last night. Her bowels are rather confined. Her eye is much improved. She was directed to take immediately a draught of the infusion of senna with sulphate of magnesia, and after its operation to continue the sulphate of quinine.

15th. She complains of general soreness and weariness. Tongue very white. Pulse upwards of 120. There is great thirst. The eye appears nearly well. The quinine to be omitted, and the following mixture to be employed.—R. Aquæ ammoniæ acetatæ; aquæ fontanæ, aa ℥iij.; vini tartritis antim. ℥ij.; syrupi ℥i. M. cochleare magnum 2dâ quâque horâ.

16th. Bowels confined; other symptoms as yesterday. (To have the infusion of senna with the sulphate of magnesia, and after its operation, the mixture, as directed yesterday, to be repeated.)

18th. Tongue cleaning; pulse 95. Mixture as yesterday.

21st. Tongue clean; pulse 88; vision imperfect, but the eye almost free from pain and morbid vascularity. (The quinine mixture to be repeated.)

27th. Discharged. The vision slightly impaired, but the eye to all appearance in a state of perfect health.

I had an opportunity of seeing this woman some weeks after she had been discharged from the hospital, and her vision was then perfect.

Joseph Bunn, aged 16 years, admitted an out-patient of the Charitable Infirmary, January 20, 1827. There is great increase of vascularity of the right eye, particularly round the cornea. The iris is of a greenish colour. The pupil is contracted, irregular, and motionless. There is intolerance of light, and vision is very imperfect. He reports that he had fever in August last, followed in a fortnight after by relapse. During both the primary attack and relapse he had been a patient in the Meath Hospital. About a month after his discharge from the hospital, the right eye was attacked by inflammation; but, from the period at which he was discharged from the hospital, the vision of the right eye had been imperfect. He has been bled, his mouth made sore by mercurials, and a variety of washes have been employed for the affection of the eye, but without any relief. In two days, half a drachm of bark, four times a day, produced the most decided effects. On the third day, the eye was nearly free from all

* "The ascertainment and promulgation of this fact (the beneficial use of mercury in iritis) are due to the infirmity of this metropolis (London) for diseases of the eye, and in the catalogue of modern contributions to medical science, except the practice of vaccination, I know of none entitled to rank before it." See *Surgical Essays*, by Astley Cooper and Benjamin Travers, Part I., p. 85. London, 1818.

pain and redness, and in a week he was in every respect well.

James Cullen, aged 17, admitted an extern patient of the Charitable Infirmary, on the 19th of March, 1827. Increased vascularity of the right eye, and particularly of the sclerotic tunic round the cornea. The iris of the inflamed eye is darker in colour than that of the sound eye. There is a pearly appearance of the humours of the right eye. His vision with the inflamed eye is very imperfect, and when he attempts to look at an object, he moves the eye as if to cause the image of the object to fall on a sensible part of the retina. He has occasional pain in the forehead, particularly at night. It is four weeks since the eye had been attacked by inflammation, which from his account had been very violent at first. The redness had been preceded some days by dimness of vision. He attributes the occurrence of the disease to his having come out of the house after dark without his hat, for, on the following morning, he observed the dimness of vision, and this was followed in a few days by redness and pain. He has been bled and blistered, and has used mercury to the extent of producing a very sore mouth, without relief. He has been a patient at Stephen's Hospital. He had fever seven months ago. The primary attack was followed by two relapses. Half a drachm of bark four times a day restored his eye to health in the course of one week.

For the following case I am indebted to Mr. M. Collis, Surgeon to the Meath Hospital, who employed the bark at my suggestion.

January 21st, 1827. Mary Davis, æt. 27, married, had fever ten weeks ago, was three weeks in bed. Her right eye became inflamed immediately afterwards. Present appearances:—conjunctiva very red; a deep-seated pain in the eye; pain over the eye-brow and in the head; vision so completely impaired that she can only distinguish day from night; pupil slightly irregular at the inner angle; colour of iris not altered; tongue white; pulse regular; appetite good. Has been using mercurials, purgatives, topical bleeding, and fomentations for the last ten days without effect. (To have a purgative bolus immediately, and after this has operated to take the following mixture:—*R. Sulphatis Quininae* ℥j.; *acid. sulphur. dil. gtt. xx.*; *aquæ* ℥viii. *Sumat cochlearia ampla duo quartis horis.*)

23d. Has taken the above mixture since last report. The pain and inflammation have considerably abated. The tongue is clean.

Feb. 1st. Since the above date till this day she has continued the sulphate of quinine, and some purgative pills occasionally. She also used a collyrium of sulphate of copper in water. The external inflammation has entirely subsided; no pain whatever in the head or eye. She remains, however, with considerable dulness of vision, which is gradually wearing away.

The following case was sent to me, March 15th, 1827, by Mr. Ryal, who was then surgeon to the National Institution for Diseases

of the Eye, and who is now chief surgeon to the naval hospital at Chatham, as an example, of iritis, for the cure of which, mercury had been employed in vain, and for an experimentum crucis respecting the influence of bark in such cases.

Thomas Farquar, aged 27, a boot-closer, residing in Charles street. The vision of the right eye is so very imperfect, that by it he can merely distinguish light from darkness. When he looks at a burning candle, it appears like a star or blazing fire. When in the dark, he is much troubled by frequent gleams of light, which dash across the diseased eye like flashes of lightning. Day-light is not so intolerable as candle-light. When he stoops his head, or attempts to work, he experiences a most severe pain in his forehead and eye-brow; a pain like a headach, but confined to one side. He has sometimes a distressing sensation, as if the vessels about the head would burst. The eyelids are tumid and livid, and their veins are large and tortuous. They adhere slightly at night. When he attempts to look at any object, he only half opens his eyes. The vascularity of the organ is greatly increased, particularly round the cornea, and the vessels appear to advance on the edge of this membrane. The iris of the sound eye is of a light blue colour, but that of the diseased eye is green. The pupil is contracted, irregular, and motionless. The humours are turbid. There is occasionally a copious and hot lachrymal discharge, which is always followed by relief. Tongue white. Pulse 80. He complains of thirst, yet says his appetite is good.

It is ten weeks since the vision of the right eye became impaired, but the organ has not been perceptibly inflamed longer than about six weeks. He had fever about five months ago; the first attack was, a few days after convalescence, followed by a relapse. Venesection, blistering, and mercury have been employed for the ophthalmia, without relief. He was under the influence of mercury for four weeks, and at the end of this period he was worse than when he began its employment. He was directed to take one tea-spoonful of bark three times a day.

March 17th. He reports that the pain is less, and that the vision is slightly impaired. The bark to be continued, and a laxative pill to be taken each night.

20th. He complains of great pain of the eye, attended by a very copious lachrymal discharge. He reports that he had been much better until yesterday, and he attributes the aggravation of the symptoms to his having taken some porter, and to exposure to cold when at chapel. The bark to be continued.

21st. Pain less, but vision not improved.

29th. In consequence of the illness and death of one of his children, he has not been able to attend to himself for some days. The pupil is more contracted than it was. The vision is completely gone. He does not observe those flashes of light which formerly troubled him, nor has he so much pain in his head. (The bark to be repeated. Belladonna applied.)

31st. The eye appears less red. The pain is less. The pupil is equally irregular and contracted as it was. He complains of a troublesome itching of the eye, and of a return of those flashes of light which formerly tormented him. Brilliant spectres also frequently appear before the eye. (The bark and belladonna to be repeated.)

April 2d. The pupil has been slightly dilated by the belladonna: it is of an oval form. The long axis of the oval is oblique from above downwards, and from without inwards. The pain and redness are greatly diminished. (The bark to be repeated.)

9th. The pain is gone, and there is scarcely any redness. There is some vision.

14th. The organ does not differ in appearance from the other eye, with this exception, that the pupil is motionless, somewhat contracted, and irregular. The vision is very much improved. (The bark to be continued for a few days.)

A few weeks ago I saw this patient. The pupil remained irregular and motionless, but the vision was scarcely less perfect than in the other eye. The organ was, however, easily fatigued.

The following case had been under the care of Mr. Rooney at the Dublin Eye Infirmary, and was sent by him to me, March 12, 1827, after mercury and depletion had been carefully employed in vain for its cure.

Ann Ward, aged 22, unmarried, residing No. 12, Coal Quay. The vision of her right eye is almost lost: by it she can merely distinguish light from darkness, or faintly observe an opaque body if interposed between her eye and the window. She complains of great pain in the eyeball and in the head over and round the orbit. The pain occurs at intervals in the course of the day, but is most severe at night. Day-light causes some uneasiness, but the light of a candle produces great distress. When she attempts to look at the light there is a great lachrymal discharge, and she only half opens the eye. The lids are tumid and livid. The anterior chamber seems shrunk or diminished in size. The cornea is dull, and at its lower border there is an appearance as if pus or lymph were deposited between its laminae. The iris is of a deeper colour than that of the opposite eye. The pupil is greatly contracted, and motionless: its lower border, which is turned backwards, adheres by a thin layer of semi-transparent lymph to the capsule of the lens. The vascularity of the conjunctiva is much increased, and there is a zone of deep-seated vessels in the sclerotic round the cornea. Her tongue is white; pulse 100; countenance pallid; her appetite is very deficient; she rests badly at night; bowels in general confined. She had fever about eight months ago, followed soon after by a relapse. The vision of the right eye has been imperfect since the time of the fever, but the organ was not painful or red until a few weeks ago. The pain and redness occurred after exposure to cold. (A tea-spoon-

ful of bark was directed to be taken three times a day, and a laxative pill each night.)

March 19th. The redness of the eye is almost gone, but the vision is but little improved. There is still some pain in the ball of the eye, and in the cranium over it. The tumidity of the lids are diminished, and the colour of the iris is restored. The flashes of light continue, but the intolerance of light is much diminished. The pupil remains contracted and irregular.

26th. The organ has assumed its natural appearance, with this exception, that the pupil is irregular, contracted, and scarcely moveable. Vision improved. She was directed to continue the bark for a few days longer.

I have been informed by Mr. Rooney, who has lately seen this patient, that her vision is restored, but that the pupil remains contracted and irregular. It is however but fair to state, that after the patient had ceased to use the bark, and after all perceptible inflammation had been removed, Mr. Rooney employed mercury again, to which he attributes the perfect restoration of vision. But, from my observation of many similar cases, I am authorized to conclude that this result would have occurred without the employment of mercury.

It is needless to add to the length of this paper by multiplying examples in proof of the efficacy of bark after mercury had failed, for the cure of this disease. I have notes of many more cases, but a further detail is unnecessary. In passing, it may be remarked that I have been informed by several who have used the bark at my suggestion, and among others, by Dr. Colles, one of the professors of surgery to the College of Surgeons, that its power was most decided in several cases, in which they had employed it after mercury had failed.

2. Cases in the primary or tic stage.

Ellen Hopkins, aged 30, unmarried, applied at the Charitable Infirmary, March 12th, 1827. Complains of dimness of vision of both eyes, but particularly of the right. The pupils of both eyes are slightly irregular. There is no increased redness of the eyes, but there is some tumefaction of the lids, which adhere together at night. There is a pearly appearance of the humours behind the pupil, particularly in the right eye. There is a severe pain in the lower edge of the right orbit, as if she had received a blow on that part; and there is considerable pain of the same eye when the organ is gently pressed. The eyes are more painful in the mornings and evenings than in the middle of the day. Occasional flashes of light dart across the right eye. It is two months since the eyes have become affected. She had fever in last October: was ill for six weeks. There were six in the same house who had fever also. This woman attended the others. She has been in a delicate state of health ever since. She was directed to take one drachm of bark three times a day, and a laxative pill occasionally.

March 20th. She has continued the bark

regularly to the present date, and it may be said that the eyes are now in a perfectly healthy state. She was, however, directed to continue the bark a few days longer.

Under this head I shall content myself with the mention of two other cases, of which I have received a brief note from Dr. Reid, president of the association of the College of Physicians, and physician to the Fever Hospital, Kevin Street, to whom I had communicated the knowledge of the influence of bark over the disease.

Catharine Bungy, admitted into ward No. 11 of the Kevin Street Fever and Dysentery Hospital, on the 12th of February, 1827, affected with cerebral fever, was convalescent on the 22d. On the 26th complained of dimness of sight, pain in the orbits, pupil of the right eye irregular in shape, so as to appear oval. No external inflammation. (Ordered one drachm of bark and four grains of capsicum in three parts; one to be taken three times a day.)

March 2d. Sight restored; pupils have a natural appearance.

3d. Discharged cured.

Hugh Byrne had relapse of fever six days after convalescence, admitted into ward No. 2 on the 28th of February, and was convalescent on the 3d of March.

6th. Complains of dimness of sight, pain in the orbits, pupil of right eye irregularly contracted, no external appearance of inflammation. Ordered the bark powders.

9th. Sight nearly restored.

11th. Relapse of fever. The powders were therefore stopped, and the treatment adapted to fever employed. On the cessation of the fever, the bark was again administered, and the affection of the eye removed.

3. Cases in the secondary or inflammatory stage.

Matthew Casey, aged 20, applied at the Charitable Infirmary, as an extern patient, March 16th, 1827. The lids of the right eye are tumid and red. They are only about half opened when he attempts to look at any object. The vessels of the lid are dilated. The vascularity of the conjunctival and sclerotic tunics is greatly increased. The iris is green. The pupil is irregular, and its edge thickened. There is some pain in the head, and considerable pain on gently pressing the eye-ball. The vision is greatly impaired. Occasional flashes of light cross before the eye. A dimness of sight preceded the redness for two days. The eye has been inflamed three days. Had fever last December, for which he was confined in the fever hospital at the House of Industry. He has been bled and purged. (To take half a drachm of bark three times a day.)

March 22d. There is less pain, less redness, and less intolerance of light. (The bark to be continued.)

26th. There is little pain or redness. The sight is improved. The iris continues green

and the pupil irregular. (The bark to be continued.)

30th. The iris has recovered its colour. The vision is much improved. There is no intolerance of light. His vision is best in the evening. *Muscae volitantes*, which troubled him, have disappeared. (The bark to be repeated.)

April 6th. Eye perfectly restored.

Ellen Fowan, aged 30, applied at the Charitable Infirmary, March 29th, 1827. There is extreme intolerance of light of the left eye, particularly during the latter part of the day. She is unable to open the lids by any voluntary exertion. They are tumid and reddish, and adhere together at night. The eye is extremely red, particularly round the cornea. There is great lachrymal discharge. The iris is green, and the pupil greatly contracted. There is a stinging pain in the ball of the eye, and a violent pain in her forehead, which she compares to that which would be produced by the darting of a sword. The pain is most severe at night. The slightest pressure on the ball of the eye is painful. She complains of a sense of weakness, of thirst, and of an unpleasant taste in her mouth. Her bowels are regular. Dimness of vision, accompanied by *muscae volitantes*, preceded the redness about two weeks. She had fever last December. She has been bled and purged by Mr. Ryal at the National Institution for Diseases of the Eye, but these remedies rendered her worse. (To take a teaspoonful of bark three times a-day.)

March 31st. She continues to complain much of the pain and of thirst. The eye, however, does not appear so red, and she can open it better. Her bowels are confined. A purgative draught was ordered, and directions given to go on with the bark on the following day.

April 2d. Pain not so severe. She opens the eye better. The redness is less. (To go on with the bark.)

She employed the bark regularly until the 10th, when she was discharged perfectly well.

It is altogether unnecessary to add to the number of cases; I shall therefore conclude with the following extract from a note, which I received some time ago from Dr. Lendric, physician to Mercer's Hospital. "I have treated two cases lately of ophthalmia with the usual characters of iritis consequent on fever, by means of the sulphate of quinine. I do not recollect the particulars of each case further than that the amendment was rapid, and speedily followed by recovery."

From the London Medical Gazette.

ESSAYS ON SYPHILIS. By JOHN BACOT, lately Surgeon to the First Regiment of Guards.

[Continued from page 499.]

Having endeavoured to show that Mr. Hunter was not in reality more successful than his predecessors in forming any marked line of

distinction between syphilitic and non-syphilitic diseases, I must next proceed to avow candidly that I am quite as little satisfied with what Mr. Abernethy has urged on the same topic. The same erroneous conclusions appear to me to have been derived from mistaken premises, but for which that acute writer is not to blame, because, the fact of the possibility of curing all forms of the venereal disease without mercury being unknown to him, he has built his distinctions upon a wrong foundation. That I do not assert this unadvisedly will, I think, be very readily admitted from considering the following passage of Mr. Abernethy's essay: speaking of syphilis, and pseudo-syphilis, he says, "since, then, our senses fail us in our endeavours to discriminate between these two diseases, and since the most important circumstance is to distinguish whether the disease is syphilis or not, we may inquire whether there are any circumstances in the progress of these different diseases which will serve us in distinguishing one from the other: it appears to me that there are." Now, what is this distinction? let me ask. Why, that the constitutional symptoms of syphilis are progressive, and never disappear unless medicine is employed. In another part of the same paper, also, Mr. Abernethy speaks the same language in a still more forcible and pointed manner. "It cannot, I think, upon a due consideration, be denied (I now quote his own words) that many sores are produced on the genitals by sexual intercourse which are not the effects of the venereal poison, and that many of them infect the constitution, and produce secondary symptoms resembling those of that disorder. It may be asked, however, if these disorders be not venereal, what are they?" Now mark the distinction he draws. "I shall denominate, in these pages, the disease which broke out at the siege of Naples, and which Mr. Hunter has described as the venereal disease, by the name given it by nosological writers, that is, syphilis; and I shall call those diseases which differ from it in its progress, and *mode of becoming well*, by a name importing those circumstances, that is, pseudo-syphilis."

I have already objected to this name, and have given my reason for so doing; and I would farther beg to observe upon the paragraph above quoted, that when Mr. Abernethy says he denominates the disease which took place at the siege of Naples, syphilis, he is in fact begging the whole question, for we are quite ignorant at this distance of time whether one kind of ulcerations only was so designated, or whether it bore the precise character which Mr. Hunter applied to chancre, simply, I presume, because it was the species of sore most commonly met with in his day; we were also totally ignorant until lately of what would take place when these sores are left to themselves, and therefore the mode of their becoming well no longer affords any distinction.

Mr. Abernethy quotes Celsus, as proving the existence of no less than eight different sores on the genitals in consequence of sexual connexion, but it has been amply shown that these

were not productive of constitutional affections, and therefore they can have nothing to do with the subject in question. In treating of the constitutional affections, Mr. Abernethy's reasonings are liable to the same objections, for they all turn upon the belief that mercury was absolutely requisite for the cure of the syphilitic chancre, and the relation of the very valuable cases he has recorded proves clearly to my mind that peculiarity of constitution on one side, and the excitement of new and diseased actions by the undue exhibition of mercury on the other, will solve all the difficulties and explain all the anomalies which they present; for nothing can be more true than a remark made by Mr. Rose, that these syphilitic diseases are seldom met with excepting where mercury has been too profusely or improperly administered.

Nothing then, according to my view of the subject, leading to a proof of distinct venereal disease, can be derived from the writings of Mr. Abernethy; he has indeed shown that sores on the parts of generation assume many different aspects—that they are sometimes aggravated by mercury, sometimes even permanently cured without it, at others succeeded by a train of secondary symptoms; and the result of his valuable experience is, that we must sometimes merely await, and, as it were, attend upon the progress of the sore, and in others use our mercurial medicines with great caution and moderation.

In bringing to your notice, next in order, the little work of Mr. Evans on ulcerations of the genitals, I feel no hesitation in saying that this gentleman has done more towards discriminating those sores which are the product of impure connexion from those which are not so, than any of his predecessors or successors: his remarks are distinguished for clearness, perspicuity, and candour, and they appear to me to include nearly all that has yet been done to any good purpose in this branch of inquiry. Mr. Evans is, however, an advocate for more than one kind of venereal disease, and his work is announced to contain an account of those ulcers which are not to be considered as the primary affection of syphilis: and why? "Because, (he says) besides wanting many essential diagnostic characters of that disease, as laid down by authors, they do not require mercury for their cure." Thus you will observe, that in the very outset Mr. Evans draws the same distinction as Mr. Hunter and Mr. Abernethy had previously done—a distinction which does not in reality exist. Mr. Evans divides his work into two parts, the first containing a description of those diseases which do not arise from sexual intercourse, including phlegmon, anthrax, chronic tubercles, but all and each of which in their ulcerative stages may give rise to erroneous views of their real nature: the second part includes all diseases arising from sexual intercourse, and he commences with excoriation and erysipelas: perhaps it would have been as well not to have included these in this division, because they may happen independently of actual connexion.

ion; but whilst making this remark, I cannot refrain from praising the accuracy with which these several affections are described, and the great good that must arise from an attentive study of their several varieties. Yet these are confessedly not syphilitic; they are followed by no after consequences; and here is the great distinctive mark which separates this class of diseases from syphilis. The ulcers which Mr. Evans describes as leading to secondary symptoms are the raised ulcer of the prepuce; and a second, which he considers of a spurious kind: the first he calls *venerola vulgaris*, the latter *venerola superficialis*, the third he denominates *venerola indurata*, from its great surrounding hardness. Now it is remarkable that though all these sores are described as if they were distinct and different in their essence, they all commence with a pustule, and, in fact, are only varieties of each other, the difference being more one of greater or less rapidity in the progress of the different stages than any thing else; they are all attended with derangement of health, highly aggravated by the incautious or free use of mercury, but without it is employed constitutional symptoms, to a certain extent, are described as being very frequent. Now when we find the author subdividing the first of these sores into four stages, that the appearance in each stage is different, that even the situation of the sore causes a change of aspect, that it is sometimes circular, at others irregular, that the colour even is not always one and the same; at the reflection of the prepuce it is often excavated, and then there is a great deal of hardness about it; whilst, again, upon the frænum it has not this cupped appearance, but on the contrary is so little concave as to leave its real nature doubtful; when, I say, these and other discrepancies are taken into the account, we find but little reason to congratulate ourselves upon possessing an accurate knowledge of this class of sores, and feel disposed to refer all these minute distinctions and varieties to the person who is the subject of it: two facts, however, respecting this, the elevated sore, are clearly made out—that it is capable of producing a similar disease by inoculation, and that ulcers, similar both in their appearance and consequences, may be produced without breach of surface from diseased secretion only; but if theoretically these distinctions and niceties of shade in the same ulceration appear to me to be delusive and inconsequent, the practical distinctions which Mr. Evans has pointed out in the different stages of ulceration, that is, the pustular, the ulcerative, the elevated or granulating, and the depressed or cicatrizing, are highly important in treating them; the notice taken, also, of general derangement of the health and constitutional disturbance, as precursory or accompanying symptoms, are also highly worthy of remark. It is by attention to these particulars, however apparently minute, that we are enabled to adapt our means of cure to particular conditions of local affection; that we now make the condition of the tongue and state of the pulse objects of in-

quiry; without, as was formerly too often the case, ordering mercurial frictions once or twice every day at least, whenever we met a breach of surface on any part of the male organs of generation. Mr. Evans also merits commendation on another account: there is no obscurity of language to be found in his work; he defines clearly the sense in which he applies his distinctive epithets; and if we do not always agree with him, at least that does not arise from mistaking his meaning.

From this sketch of Mr. Evans's labours, I must infer that all which he enables us to assume is, an answer to our first question—that it is possible to ascertain clearly and distinctly certain forms of ulceration which are not the produce of impure connexion, and, moreover, that his observations go far to prove that sores not being so produced are not followed by constitutional affections. But in order to solve our third query we must proceed farther in our search, and examine the work of Mr. Carmichael, who professes to have traced several distinct morbid poisons to their source, and to point out also the consecutive symptoms belonging to each. The first edition of this gentleman's work was published in 1814, and the ground he then took up was certainly much more tenable than it is at present, since he there declares his belief that the specific ulcer to which he restricted his definition of syphilis, together with its peculiar consequences, that is, a scaly or leprous eruption, with affections of the periosteum and bones, could not be cured without mercury. But I do not understand how he can maintain the same proposition in 1825, when he admits that he is now convinced that this form of disease can also be cured by the same simple means which he recommends in other forms of these complaints.

But before I begin to comment upon Mr. Carmichael's opinions, it will be necessary just to call to your recollection his arrangement of venereal diseases, which he divides into four classes—the first of these being the most prevalent of all, and distinguished by an eruption of a papular character in its secondary stage, the primary symptoms being either a simple ulcer, without induration, elevated edges, or phagedena; secondly, a patchy excoriation of the glans, or a virulent gonorrhœa.

The second he calls the pustular venereal disease, from the appearance of the eruption; the primary sore is distinguished by a reddish-brown surface, which borders closely on the phagedenic character; its edges are raised and well-defined; it is not excavated, but is either upon a level with the surrounding parts or raised above them.

Thirdly, that form of eruption attended with spots having less of the pustular character than the preceding class, and frequently accompanied with tubercles, terminating in ulcers covered with thick crusts, which extend with a phagedenic margin, the primary ulcer being phagedenic.

The fourth, and last class, is the scaly venereal disease, to which alone he attaches the

name of syphilis, and which he designates from the scaly eruption attending it: the primary ulcer of this class is the venereal chancre of Mr. Hunter. Bearing these distinctions in mind, I will now proceed with my remarks. It is strange that Mr. Carmichael, as well as Mr. Abernethy, should attempt to enlist Celsus on their side of the question; for, as I have more than once remarked, there is no dispute as to ulcers on the genitals, both arising from sexual connexion as well as without it, having always been known; and how, indeed, should it have been otherwise? But the disease to which I restrict the term syphilis, or venereal, if you please, is one wherein ulcerations on the parts of generation are followed by secondary symptoms; and the whole debate resolves itself so far into this—is each particular ulcer the fruit of a particular poison, or are these varieties the result of one only? There is one point in which I perfectly agree with Mr. Carmichael, I mean in condemning the terms syphiloid, or false pox, or any other epithet by which diseases, either produced by mercury in a bad habit of body, or those in which the symptoms, either local or general, do not continue their progress according to our preconceived notions, are distinguished; but my views in so doing are different from those of Mr. Carmichael, my object being still farther to narrow the vocabulary he has employed, by acknowledging only one venereal disease; and I cannot see upon what grounds, or with what justice, he supposes that such terms are necessary to be used by those who admit of only one venereal poison; it is clear to me that such a belief is directly opposed to any such compromising epithets. Mr. Carmichael's opinions rest upon the two-fold foundation of facts and arguments; and the first observation which I shall make refers to that defence of his doctrine which he derives from the unchanged and unchangeable properties of other eruptive diseases. These analogies I might perhaps be permitted to overlook, since it still remains to be proved that they are applicable to other forms of disease, and there is no just reason to be given why, because the small-pox and cow-pock proceed always in one course, that therefore the venereal disease must do so likewise; but I will pass by this objection, and ask if it be really true that this exact uniformity is maintained in the instances thus adduced. Now, with regard to the cow-pock, any thing but uniformity is found, or why so many contests as to what is or is not a genuine pustule? Is it not notorious that a delay of one day only, by substituting matter for lymph, will derange the whole train of phenomena, and produce a disease neither similar in appearance nor equally powerful in its effects? In small-pox is there no difference between the confluent and distinct sorts? Suppose a person to whom the disease was totally unknown were first introduced to a patient labouring under the last stage of this loathsome distemper in its confluent form; the face and body bloated, and covered with black scabs; a horrible fetor issuing from the whole body; the eyes closed,

and perhaps lost by suppuration; abscesses open in various parts; the sufferer delirious, and parched with fever in its severest form; and then let him contrast this spectacle with that of a person who has fifty or perhaps an hundred small pustules sprinkled over his body, with but trifling derangement of the general health, and no one other symptom denoting disease, and you would scarcely be able to persuade him that both these patients were labouring under one and the same disease; and yet nothing can be more true, nay, it is perfectly possible, that this very mild disease may have been directly propagated from an inoculation of the former. Now, between the papular eruption and the scaly eruption, as described by Mr. Carmichael, a greater degree of difference does not exist, for according to that gentleman's own account no small degree of attention is necessary to distinguish whether the scaly eruption has been so from the first, or whether it is only so in its last or desquamating stage; in other words, proving that it is only a distinction *quoad majus*, or *minus*. Having laid so much stress upon the invariable nature of the small-pox and cow-pock, I am sure you will be surprised at the following quotation, which, though long, is too important to omit. "All eruptions," says Mr. Carmichael, "venereal or not venereal, imperceptibly glide into those of the nearest character; and it often happens that a practitioner can only determine the nature of the eruption for which he is called upon to prescribe by an attentive consideration of its progress. Thus the chicken-pock is often found (to the great perplexity of the profession of late) to contain pustules so large, and so closely resembling those of small-pox, that it is only by attending to the progress of the eruption, and perhaps to its termination, that one can be distinguished from the other. On the contrary, small-pox often exhibits so many papulæ and vesicles, or half-formed pustules, that the character of the disease is not very often distinguished even by the most experienced practitioner until its progress determines its nature. The common itch is a disease which exhibits three orders of eruption all at one time—pustules, vesicles, and papulæ; and yet the general character of the disease is so obvious, that almost any person can, without hesitation, decide upon its nature. In the same manner, venereal eruptions are sometimes observed to glide into those of the nearest character. Thus the papular eruption may exhibit a few pustules, which, like the pustular venereal eruption, form thin crusts, instead of ending in desquamation; but still the character of the disease is so apparent that there is not by any means the same degree of ambiguity which attends the variolous and varicellous diseases; and in the same way the pustular disease may exhibit papulæ among the pustules, to which the same observations may be applied."

It is surely unnecessary for me to make any comments upon, or to point out, the errors of this passage. But let us look at other analogies: who is there who has not met with some

of those melancholy cases of irritative fever, produced by the most trifling accidents, and has not witnessed the most marked and decided difference in the effects upon different individuals? for my own part, I have seen bleeding alone produce an ulcer, an attack of erysipelas, a sloughing sore, and in one instance a gangrene of the whole arm; and yet in those several instances there was no pretence for asserting a variety of poisons; there is only that vague term, a peculiarity of constitution, or condition of the system, to account for effects so apparently distinct. In mentioning a few of the varieties of ulceration on the genitals, Mr. Carmichael observes, that nothing can be more opposite from the commencement than the common chancre with its hardened base, like a piece of cartilage under the skin, and the sloughing ulcer; but in fact, we find upon examining the subsequent part of the work, that a pustule, or pimple, is the acknowledged origin of them all: and I cannot help thinking that this similarity in their commencement is not by any means a light argument in favour of my views. I would farther object to Mr. Carmichael's arrangement—that in speaking, for example, of what he calls the papular venereal disease, he ascribes it to no less than three separate forms of primary affection; first, a simple ulcer without induration, elevated edges, or phagedena, but whose characters are not very remarkable; secondly, a patchy excoriation of the glans and prepuce; and thirdly, a gonorrhœa virulenta. Thus you perceive that he admits the same train of constitutional symptoms to arise from two different ulcers and a gonorrhœa; and why he should admit so much, and carry his belief to that extent and no farther, I cannot conceive.

Again we find that, according to Mr. Evans's opinion, Mr. Carmichael has subdivided what he calls the *venerola vulgaris*, or raised ulcer of the prepuce, unnecessarily; and farther observes, very pertinently, that in the indurated ulcer the peculiarities arise in fact from the state of the constitution inducing the erysipelatous instead of the phlegmonous inflammation; thus affording an explanation, or perhaps we may be allowed to say a refutation, of one of the distinct families of sore to which Mr. Carmichael has attached peculiar consequences. So far I object to that gentleman's reasonings. I shall now proceed to make a few comments upon his fact; but I have previously an observation to make, in answer to an objection which he has foreseen will be raised against his classification, and which he therefore endeavours to remove. "It may be objected," he says, "to this classification, that the nature of the disease cannot be known until the eruption takes place; and on a loose computation, it may be regarded that nine cases out of ten of primary sores are not attended by constitutional symptoms; so that in a great majority of cases the disease has never arrived at the stage for which it is indebted for its name. To this objection I reply, that the primary ulcers afford a less decisive means of determining the nature of

the disease than the secondary; yet from their character, when unaltered by irritation or mercury, we may discriminate their nature with sufficient certainty to decide on the precise eruption they would produce in their secondary state." Now, how would the reputation of any surgeon stand in private practice who could not decide upon the nature of the disease until secondary symptoms occurred; and how often must it happen to him to be obliged to give an opinion when both common and mercurial irritation has assailed the primary sore? and therefore, whilst I admit the force of the objections Mr. Carmichael has himself raised, I do not think that he has urged any argument to remove them.

The first remark I shall make relative to the discrepancy between Mr. Carmichael's theory and facts is, that he does not always conform to his own definitions: he gives us an example of a phagedenic sore which is followed by those appearances which should attach to the raised ulcer; he admits that the papular and pustular diseases are sometimes mixed; in some of his phagedenic cases, we find that character has been given to the ulcer by the action of mercury; in still more of them, the original character of the sore is not preserved throughout, so that the form of secondary symptoms, which *ought* to succeed according to the classification, is very difficult to divine;—in short, he frequently departs from his own arrangement. His description of a phagedenic ulcer includes, unless I am much mistaken, two very distinct kinds of sore, and, in more than one instance, a phagedenic surface and elevated edges are united in the same description of ulcer. Nay, more, he tells us that occasional difficulty may be encountered in distinguishing the phagedenic ulcer from the other primary ulcers: it, however, displays its character of phagedena so early, that he thinks it cannot often be confounded with an ulcer that becomes phagedenic from irritation; and he adds, that neglect, local irritation, and even constitutional irritability, will cause *any ulcer* to become phagedenic. What, then, should prevent me from assuming that an early irritation may produce an early change in the character of the sore?—and then what becomes of the distinctive phagedenic ulcer, and its appropriate, consecutive, constitutional symptoms? But, perhaps, the strongest objection that can be made to what this gentleman has advanced, is to be found in the evidence of contemporary authors, who, as far as I have been able to collect their opinions, have in vain endeavoured to follow the classification Mr. Carmichael has laboured to introduce with any thing like constancy and regularity. Thus Mr. Jenner remarks, that in fifteen cases of eruptions succeeding to the Hunterian sore, six were tubercular, five exanthematous, two pustular, &c. In seven cases where the eruption was accompanied with sore throat, three were exanthematous, two tubercular, and one papular, scaly, and tubercular, all united; and one was both tubercular and scaly. Again, we find Mr. Rose observing, that in several of

his cases of papular eruption he could not trace any decidedly uniform character in the sores; and, in one instance, he considered the ulcer as a well-marked example of true chancre;—and, finally, Mr. Guthrie believes that the sloughing ulcer is but seldom followed by secondary symptoms, unless improperly interfered with; and is also directly opposed to Mr. Carmichael respecting the uniformity of the secondary symptoms consecutive upon the phagedenic ulcer. From the united experience of these and other practitioners, as well as from my own observation, it does not appear to me to be possible, at present, to form more than one or two general conclusions, the principal of which appear to be, that the papular is by far the most common form of all the eruptions met with in syphilis; that the sloughing sore, in its most acute form especially, is often unattended by any form of secondary symptom; and that the tubercular eruptions are very often the result of the inadequate exhibition of mercury.

I shall here beg leave to recapitulate the reasons that induce me to differ entirely with the views of Mr. Carmichael, to whose practical labours, however, I attach a very great degree of merit. His discrimination of many of those cases in which mercury is injurious, his general line of practice, especially his attention to the constitutional condition of his patients, deserve great consideration; and I shall frequently have to speak of his treatise with warm approbation when detailing the treatment of particular symptoms. I recur to the grounds of my dissent. 1st. If we are to draw an inference in favour of a multiplicity of venereal poisons from the mere appearance of an ulcer, there seems to be no reason why we should not admit of twenty or thirty instead of four or five species of venereal poisons. 2dly. In the progress of an ulcer it has often been observed that, in consequence of local treatment only, its whole character has become changed, so that it shall answer the description of a totally different sore: are we to conclude, therefore, that the poison has the power of changing its character? 3dly. There is abundant proof that the same woman shall communicate an ulceration of a totally distinct character to different men: are we, then, called upon to believe that two or three different morbid poisons exist in the same person at the same time? 4thly. It has not unfrequently happened that a sore, supposed to be syphilitic, and healing under the influence of mercury, suddenly suspends the healing process, and a new action commences, giving a totally new character to the ulceration: this is evidently no effect of a particular poison, but is owing to a change in the habit of the patient. 5thly. It is often impossible to pronounce upon the specific nature of the local disease, until its character is confirmed and decided by the occurrence of its peculiar form of eruption, a circumstance alone sufficient to render this arrangement inapplicable to general purposes; and lastly, it is unphilosophical to seek for several causes to produce the same effect, when

the phenomena are able to be explained in a much more simple manner.

Thus, then, I am led to conclude that in the present state of our knowledge we cannot give any satisfactory answer to my third query—that is to say, we are not able to trace, with certainty or regularity, distinct forms of constitutional affection to distinctly marked forms of primary ulceration; and this leads me to believe that there is one venereal poison only, and that the variations we observe in the symptoms, both locally and generally, arise from difference of habit, difference of treatment, perhaps from different stages and conditions of the virus itself, and from many minute and undefined circumstances with which we are at present unacquainted. Moreover, it is equally clear to me, that if we are to restrict the employment of mercury to that sore in which all the characters of the Hunterian chancre are united, we should have very few opportunities of employing it at all, but should continue to be disgraced by a succession of secondary symptoms, which the more frequent and judicious employment of that medicine would most assuredly prevent.

Having thus discussed the history of syphilis, and considered the modern doctrines at some length, I shall proceed now to inquire into the nature and effects of the syphilitic virus, and endeavour to decide upon another much contested question—that of the identity of the poisons of gonorrhœa and lues.

(To be continued.)

From the Edinburgh Medical and Surgical Journal.

ON STRANGURY FROM CANTHARIDES, AND ITS RELIEF. By JOHN DAVEY, M.D., F.R.S.

Strangury from cantharides, especially when applied to the skin for the purpose of blistering it, is of such frequent occurrence, and generally of such short duration, that it is commonly thought little of; and I hardly know which has received least attention from systematic writers,—the explanation of the affection, or its relief.

To those who are conversant in hospital practice, and who apply themselves to pathological anatomy, it must be well known that this kind of strangury is connected with phlogosis of the lining membrane of some part of the urinary passages. I have observed it most frequently in the pelvis of the kidneys, and in the bladder of urine, and occasionally in the ureters, and in the upper part of the urethra. The part affected with inflammation is swollen and dark red, from blood extravasated into the cellular structure, under the epithelium. Sometimes, when the effect is most severe, blood, it is well known, is actually effused into the passages themselves, giving rise to bloody urine. Sometimes, on the contrary, when the effect is slight, œdema, with very little redness of the mucous membrane is produced, unattended with strangury

or any symptom indicating the specific action of the cantharides on the parts in question.

During the prevalence of strangury, I need not observe, the secretion of urine by the kidneys is either much diminished, or almost totally suppressed:—at the same time, from the irritation of the bladder, a constant desire urges the patient to attempt micturition.

The experienced practitioner can have little faith in the means commonly recommended for relieving this painful affection; such as the camphor mixture, *spiritus ætheris nitrici*, &c. Those who have tried these medicines most, if I may draw an inference from the result of my own observation, must place least confidence in their efficacy. The only means of relief which I have found almost constantly to succeed is the introduction of the catheter, used not with the idea of drawing off urine, but for the purpose expressly in question. It should be employed with delicacy and caution, just slipped into the neck of the bladder, and kept in only a few seconds. The process is seldom very painful, and the relief is almost immediate.

The rationale of the effect I shall not attempt to explain, as I have nothing but conjecture founded on analogy to offer on the subject.

Zante, August 24, 1824.

From the London Medical and Physical Journal.

OBSERVATIONS UPON A DISEASE OF THE STOMACH, in which a well-defined Perforation takes place in the Tunics of that Organ, without any Softening of their Structure; illustrated by Cases. By Dr. C. H. EBERMAIER.*

Notwithstanding the attention of the profession has been directed to this subject by many able practitioners, no satisfactory information has yet been recorded which connects the appearances detected upon examination after death with the symptoms which existed during the life of the patients. The cases hitherto collected, in which these circumscribed perforations have been found, with smooth and regular edges, and without any alteration in the structure of the surrounding parts, have been generally in direct contradiction to the opinions formed from the symptoms complained of. In 1803, Gerard endeavoured to deduce some general opinions from the facts which had been stated respecting perforations of the stomach, and to explain the symptoms which took place during life. Chaussier has also described an appearance sometimes detected in the stomach, which might be referred either to the action of poison, or to some external injury, or to disease of the stomach. His work relates principally to perforations produced by softening of the stomach. Since the moderns

have become more familiar with this softened state of the stomach and intestines, cases of perforation and spontaneous rupture have been frequently observed and recorded. The disease upon which these appearances depend must consequently be common. The subject of perforations in the stomach with smooth edges has, however, been much neglected.

Case I.—A woman, twenty-two years of age, of robust form, sought assistance for ophthalmia, under which she had laboured for several weeks. This affection was speedily subdued. Dr. E. was then informed that for many years the patient had suffered, almost constantly, from a train of symptoms which would hardly have been suspected from her general appearance of good health. The only mark of ill health was a slight paleness of the face. At the age of eighteen she began to menstruate, and, after having continued regular for about a year, the menses ceased, without any evident cause. For some months she continued in good health. At the end of this period, the digestive functions were much disturbed: her stomach ceased to bear her accustomed food; even the lightest aliment produced considerable pain in the stomach, acid eructations, and pains in the præcordia. These symptoms gradually increased both in duration and severity, and frequently appeared suddenly after the patient had eaten. Vomiting soon took place some hours after food had been taken; half-digested aliment, mixed with mucus, was thrown from the stomach. The symptoms were not, however, relieved by the stomach being thus freed from its contents. At length the vomiting became almost constant, even after the mildest food, but it was not so violent. The symptoms were not yet, however, so severe as to confine the patient to bed, or to prevent her from following her ordinary occupations, excepting occasionally for a few hours. The nutrition of the body did not appear to be much diminished. So far from this being the case, there were intervals of some months in which the patient enjoyed comparative ease, and during which the spasms of the stomach were so much diminished as to lead to the hope of radically curing a disease which had been considered more distressing than dangerous.

During the first two years, a great variety of means were had recourse to, without any avail. The whole tribe of antispasmodics and emenagogues were exhausted in vain. The menstrual discharge did not appear. The imperfect digestion, the vomiting, the dull pain in the region of the præcordia, and occasional attacks of fever, continued without diminution. The patient consequently lost all confidence in the power of medicine, and resolved to trust to the efforts of nature alone; which she did during one year.

It was presumed that the derangement of the stomach was produced by the total suppression of the menstrual discharge.

Having again submitted herself to the di-

* Journal Complementary, Juillet 1828.

rection of her physician, she was bled in the foot; a mixture of cream of tartar, sulphur, and chamomile infusion was taken; the feet were frequently immersed in warm water; and the lower part of the abdomen was rubbed with stimulating liniments.

For several months Dr. Ebermaier entirely lost sight of her. He was informed that she was relieved for a short time by the above treatment, but that all the symptoms then returned with their original severity. She was still able to perform her domestic duties, but was incapable of working in the field, on account of the pain she experienced in bending her body. Pressure did not increase the pain she complained of in the epigastrium. She every day carried milk and vegetables the distance of a mile, without inconvenience. The menses had not appeared. Frequently and irregularly spontaneous and easy vomiting took place, two or three hours after she had taken food.

At the end of about seven weeks she died suddenly, to the astonishment of Dr. E., who had still viewed her malady with little apprehension.

Until the day of her death she continued lively in spirit, and capable of performing moderate labour. She rose early, took a little bread and coffee, and went into the garden to gather fruit, which she was to carry to market. She was in the act of stooping, when she suddenly screamed out, with great anxiety, "I am dying," and fell apparently expiring in the greatest torture. Her hands and feet became cold; she complained of excessive pain in the belly; the thirst was extinguishable, and her general restlessness and anxiety very distressing. There was now no disposition to vomit. She died in a short time.

Upon examining the body, a considerable quantity of fluid was found in the abdomen. In the stomach was found a regularly formed hole, on the anterior part, through which the contents had of course escaped into the abdomen, together with the large quantity of water the patient had taken during the last hours of her existence. Around this aperture there was not the slightest appearance of inflammation, redness, suppuration, ulceration, or erosion; nor any organic lesion whatever. The internal margin of the orifice was perfectly smooth, and the surrounding parts as free from any morbid appearance as the external. The hole, in fact, presented the same appearance as one which would be made in a piece of leather with a punch.*

* It is worthy of remark, that precisely the same description of a perforation found in the stomach, has been given by Mr. Griffiths, in his account of a somewhat similar case. His words are, "the perforation looked much as if it had been made with a punch." Vide London Medical and Physical Journal for April 1825, p. 289.—In the case related by Mr. Griffiths, the patient had suffered from

Case II.—A man, fifty years of age, of a sanguine and bilious temperament, had complained, every two or three months for the last five years, of pains in the belly. He died suddenly. On the right anterior surface of the stomach, a hole, about the size of a two-franc piece, with callous edges, was found. In the small intestines were observed several gangrenous spots. It was ascertained that, five years before the commencement of the symptoms under which he had laboured, he had received a severe blow from the pommel of a saddle on the epigastric region.

Case III.—A girl, fifteen years old, had suffered for two or three years from slight pains in the belly. As her sufferings increased, medical assistance was sought for. She was found to have all the symptoms of enteritis; the face was pale and anxious; urine small in quantity, and of a deep colour. Bowels constipated. The patient could assign no cause for the attack. Some years before she had had a similar attack, and since this time she had been occasionally subject to pains in the stomach.—Ten ounces of blood were taken. Aclyster with castor-oil was administered, and emollient fomentations applied to the abdomen. She died in half an hour.

Appearances post-mortem.—The omentum adhered to the peritoneum, and at different points to the intestines. The abdomen contained a good deal of serous fluid, mixed with coagulable lymph. Throughout the small intestines there were traces of inflammation. The large intestines were also slightly inflamed in different parts, and much distended with air. The liver was smaller and paler than usual. The stomach was empty, and inflamed in different spots. Near the cardiac extremity a circular hole was found, of about nine lines in diameter: its edges were smooth and regular. At the opposite side of the stomach there was another perforation, of an oblong form, but not passing entirely through the external membrane. It appeared as if it had been once completely perforated, but that the orifice had subsequently closed.

Case IV.—A robust man was attacked with a fixed pain in the epigastrium, accompanied by so distressing a throbbing that he was twice bled. After his meals, he vomited both solid and liquid food. For a long time he confined himself to a very light diet, but without any benefit. For a considerable period he suffered from attacks of fever, the pain and vomiting still continuing. He was frequently bled. He at length threw up a considerable quantity of blood, mingled with pieces of substance, some resembling liver, and others like fragments of the villous coat of the stomach. For about three weeks he went on with occasional variations in the severity of his symptoms, when, after a very

previous illness for two months; she was attacked suddenly, after eating a hearty breakfast, with great pain in the belly, and died in a few hours.—EDITORS.

severe accession of pain and vomiting, he fell a sacrifice to the disease.

Upon examination, the abdominal viscera were found swimming in a mixture of oil and other liquids which the patient had taken. The stomach was free from adhesions to any of the surrounding parts, and without any traces of inflammation. On the right and anterior part of the small curvature a round hole was perceived, about six or seven lines in diameter. The interior of the stomach was perfectly free from any traces of inflammation. The internal orifice of the perforation was much larger than the external. The edges, examined with the finger, appeared hard, solid, and of a cartilaginous nature.

Case V.—A man, twenty-eight years of age, had been frequently troubled, during his youth, with affections of his stomach, which had been attributed to worms. For many years he enjoyed an apparently good state of health. Without any previous indisposition, he was attacked suddenly one evening with violent pain in the belly, which almost bent him double. He was carried home on a board, and threw up from his stomach some bread and wine which he had taken in the morning. A similar mode of treatment was adopted to that in the above cases, but without effect. He died in a few hours.

Appearances on Dissection.—The contents of the stomach had escaped into the abdomen. At the small curvature of the stomach, about an inch from the pylorus, a hole was found, about a line and a half in diameter, and rounded as if it had been made with a punch. This hole was surrounded by a red circle. The interior of the stomach, and every other organ, were perfectly healthy.

Case VI.—Desgranges attended a woman who for four years had been subject to pains in the stomach, from the severity of which she at length died. She never vomited. A similar aperture was found in the stomach to that above described. In other respects the stomach was perfectly healthy. The intestines were slightly inflamed.

Case VII.—A man had been subject for a considerable time to pains in the stomach. He had sometimes long intervals of ease. He gradually emaciated. Vomiting took place; and, after great and tedious suffering, he died. The pylorus was found in a scirrhus state. Two apertures were seen in the stomach, one an inch in diameter, the other much smaller. There was no appearance of inflammation in any part.*

For many reasons, this communication of Dr. Ebermaier's demands our strictest attention. In the first place, it is of course desirable that all similar cases should be recorded, that we may be enabled, if possible, to estab-

lish a diagnosis of so formidable a malady, the symptoms of which, in many cases, unfortunately so much resemble a violent attack of spasm, that the practitioner may easily be led to adopt a mode of treatment which cannot but be prejudicial. The sudden and violent manner, also, in which the patient is not unfrequently attacked and destroyed, may excite suspicions that some poisonous article has been administered; and the most lamentable consequences may ensue, if the medical attendant is not aware of the frequent occurrence of such cases. A case in point occurred in France in 1818. A woman was attacked with violent pains in the stomach, and general symptoms of illness, after having walked some distance on a very sultry day. She had taken no refreshment whatever until her return home, when she partook of a light meal with her husband and some friends. From the commencement of the attack, she was tormented with raging thirst; she had frequent stools, accompanied with great pain in the bowels. She did not vomit. Upon examination post mortem, the stomach was found to be in a state of inflammation, and there was every appearance of some violent caustic having been applied. In some parts the coats of the stomach were entirely destroyed. The pyloric portion was of a deep brown colour and contracted. After this examination, Dr. R. declared it to be his opinion that poison had been administered. The same opinion was also given by several physicians and surgeons, who were consulted. It was determined that the destruction of the stomach must have arisen from some caustic material, *for that no disease could destroy so large a portion of living animal substance.* Chausier was fortunately called upon for his opinion: he very properly deprecated the rash and ignorant decision of his brethren, who had made no attempt to prove the presence of poisonous matter. He stated that the same appearances, and the same sudden accession of symptoms, frequently occurred from internal disease. The husband of the woman was consequently acquitted. There was not the slightest grounds for suspicion in this case excepting the manner in which the woman had been attacked, and the destruction of the stomach which was detected upon examination after death.

We not unfrequently find a partial, or even general, destruction of the stomach, in young children. The symptoms that exist during life in these cases sometimes clearly indicate disease of the stomach and bowels; but almost as frequently they are very obscure, and do not point out any derangement of the digestive organs. In these instances the aperture found in the stomach is very different from that described in the above paper. The edges are ragged, and the whole of the stomach is usually soft and pulpy to the feel. Various parts of the intestines also are generally found to have lost their natural firmness, and are torn if but slightly handled. A very instructive paper has been published by Dr.

* For much additional information upon this very interesting, and as yet obscure subject, our readers may consult the *Dictionnaire des Sciences Medicales*, tome xlvi. p. 314, art. Perforation, illustrated by plates.

Gairdner upon this subject in the Transactions of the Medico-Chirurgical Society of Edinburgh, 1824. A paper was also published by Mr. North in our journal for December 1824, upon the same subject.

By Mr. Hunter, and many other authorities, this destruction of the stomach has been presumed to arise from the action of the gastric juice. We doubt the accuracy of this explanation. Mr. Hunter was led to adopt this opinion from finding these appearances in the stomach where the subject had died suddenly, and where he presumed the gastric juice still retained its activity, and that, consequently, the process of digestion went on after death; while the stomach, being dead, was no longer capable of resisting the powers of that menstruum which itself had effected the digestion of food. But it will be seen, by a reference to the papers we have just mentioned, that most of the children in whom this destruction of the stomach was found had long laboured under very tedious and debilitating diseases. To these cases, then, Mr. Hunter's explanation cannot apply.

Mr. Paxton observes,* "We have been in the habit of examining a great number of animals at different periods after death, and most of them carnivorous, whose gastric secretion is more active than that of the human stomach in dissolving animal matter; yet in these we never could find any erosion of the coats of the stomach, which must have been the case if it were possible for the gastric juice to have such effects. We consider the stomach, therefore, to be equally insensible to its presence in life or in death."

In a case which was published in the Medical Repository for August 1815, about half the cardiac portion of the stomach was found to be completely destroyed. The preparation was presented to Mr. Brookes. The child had long been in a very feeble state of health, and at last died in a complete state of marasmus. In such a case there could be no reason for presuming that the gastric juice possessed any unusual activity: on the contrary, its powers must have been weakened in proportion to the debility of the viscus which secreted it.—
EDITORS.

From the Lancet.

GASTRIC AND DIAPHRAGMATIC PERFORATION AND EROSION. By HENRY M'CORMAC, M.D. Belfast.

To the Editor of the Lancet.

A case of very extensive perforation of all the coats of the stomach having recently come under my notice, I am desirous that the results, however trifling in importance, should not be lost. I shall relate the circumstances as they occurred, subjoining a few observations.

The patient (Smith) was brought into the Belfast Hospital early on Saturday morning, apparently labouring under the effects of compression of the brain. Some of the usual symptoms, as I learned from the attending physician, were wanting. The pulse being at first 70, and rising to 130 afterwards, neither was there any dilatation of the pupils. The patient was bled, and a portion of wine was given, but without any beneficial result. During the course of the day, he continued in a state of stupor, only interrupted by frequent attempts to vomit, and at one o'clock on the ensuing morning died.

At eleven, in pursuance of a Coroner's Inquest, examination of the body took place, in the presence of a number of medical gentlemen, when the following appearances were presented. A wound of the left temple, in the form of a right angle, about two inches in extent, said to have been occasioned by a bayonet stab, after the deceased had been knocked down in a fray with the sentinel of an adjoining barrack. A slight contusion on the same temple, supposed to have been produced by the hand-blow, which felled the deceased. The calvaria, or skull-cap, being denuded and removed, no fracture was discernible. An almost continuous coating of coagulated blood was visible on the pia mater, covering the upper surface of both hemispheres. There were about two ounces of bloody serum at the base of the brain. In the left plexus choroides were imbedded several hydatid-like vesicles, about the size of peas, and also a number of round substances, smaller than the preceding, having the white colour and consistency of brain. Of these two I may remark, that the former is very common; the latter, I never observed before.

Being desirous of ascertaining the condition of the abdominal and thoracic viscera, I detected perforations in the cardiac extremity of the stomach, to an unprecedented extent. The thorax was, however, previously opened, and about sixteen ounces of a reddish fluid were found in its right cavity. This being sponged out, I traced the mode of its introduction through a hole in the diaphragm, large enough to admit the fore-finger to pass with ease into the stomach. This hole had a black, sphacelated and ragged appearance round its margin, the muscular fibres being also separated. There was also erosion, but not perforation of another portion of the diaphragm, near the origin of the inferior muscle. This erosion was two inches in diameter, and existed on both sides, having a blackened appearance, the peritoneal and pleuritic coats being nearly obliterated; there was here also a separation of the muscular fibres. The perforations in the stomach were two principal and some smaller ones; the first were about three inches in diameter, having irregular indented edges, together with filmy prolongations of the peritoneum. The mucous membrane round the perforations was blackened and partially eroded. These perforations, when the stomach was *in situ*, corresponded with the alterations

* Paley's Natural Theology, illustrated by Plates and Explanatory Notes, by James Paxton.

of structure in the diaphragm. With respect to the rest of the stomach, it evinced the appearance of intense phlogosis, the vessels being injected, and the intervening surface red, but not uniformly so; this was also the case throughout the whole course of the duodenum.* Externally, the rest of the intestines appeared sound, but there was not sufficient time to examine their inner surfaces. The left lobe of the liver was partially covered with irregular yellow spots, which alteration of texture did not proceed further than the surface.

The interest of the preceding case is considerably augmented, from its having been made the subject of medico-judicial investigation. The soldier was not brought to trial, as he was acquitted after I had given my evidence before the grand jury of the county; but certainly, had that not been the issue, I should have felt myself obliged to have given such a statement, as would have produced an impression on the minds of the jury, that the violence committed on the person of the deceased was but a secondary and inferior cause in producing his death. Because, contrary to the opinion of most of our English physiologists, I am inclined to believe, that perforation of the coats of the stomach mostly, if not always, takes place before death, setting aside, of course, that which is producible by poisons. It would, however, take up too much space to enter into a discussion of the arguments on both sides of the question. False inferences have been drawn from Spallanzani's experiments, vide Paris's Jurisprudence, 2d vol. p. 165; these will be evident upon perusal. Hunter, Adams, Burns, and others, have admitted the post-mortem and ante-mortem dissolvent powers of the gastric juice, founding their opinions on very gratuitous premises. *The fact is, the gastric juice has no dissolvent powers at all, at least not more than what is possessed by any other watery and mucilaginous secretion.* It is only secreted after the deglutition of food, and so far from being designed for digestive purposes, there is no evidence to prove that it is secreted in larger quantities than suffice to lubricate the coats of the stomach in common with those of any other viscus, and prevent the adhesion of the food. We see men drink enormous quantities of fluids without injuring their digestive powers, in which case the gastric juice, as it is quaintly termed, together with the saliva, would be diluted so as to lose all its energy, if it had any, unless, indeed, it possesses the miraculous power of communicating it to other fluids. The gastric juice can possess no such properties, any more than the mucus of the bladder, or gall-bladder, could serve to diminish the fluids of which these viscera are the recipients. I beg to refer the reader to the excellent observations of Meckel, Chaussier, and Breschet, on this subject. "How is it," says the latter writer,

* This was quite observable after the parts had been a week macerating.

"that we never observe perforations in the stomachs of those who are starved to death?" This would evidently often be the case, if the gastric secretion possessed any such properties. *Every hollow viscus in the body may undergo the perforative process,* in which assertion I am borne out by the experience of Andral, who also informs us, that there is not a single point from the mouth to the anus, which has not been found perforated after death; so that either the gastric juice does not possess this sarcophagic property, or the secretions of the intestinal canal, (in men as well as in herbivorous animals,) of the bladder, gall-bladder, the different excretory ducts, &c., all do. This solvent power of the ventricular secretion, is of a piece with that once attributed to pus, and the belief of it is unworthy the pathology of the present day. It is amusing to recall to mind the powers which were formerly attributed to this secretion, viz. that of being able to dissolve bones, clay, metals of different kinds, and stones; being, as Paley observes in his Natural Theology, in his observations on the gastric juice, stronger than "caustic alkali, mineral acid, red precipitate, or aqua-fortis itself, while it is, at the same time, as bland and mild as gum water or saliva." If all this were the case, it would have a just title, indeed, to the name of "the chemical wonder of animal nature," as the worthy bishop calls it. But, as with tribute, let us give wonder where wonder is due, having things of marvellous-enough properties in the world to contemplate, without producing others, which are *effete* with them, and then setting them up to stare at.

In the enumeration of my authorities, I have omitted to quote Orfila's excellent work on Toxicology, Vol. II., p. 570, where the reader will find some interesting cases, to which I would add a few, which I have had the pleasure of hearing him instance in his lectures; but that I fear I have already taken up too much space. I shall, however, just add, that of at least one thousand bodies, which I have either examined, or of which I have witnessed the examination, I have not seen more than a very few cases of perforation. I wish to make a few other observations on subjects which I deem of importance, but will defer them to another opportunity.

From the Medico-Chirurgical Review.

DISTRESSING CASE OF NEURALGIA.

[For Consultation.]

The motives which lead us to publish the following most melancholy and terrible case will be readily appreciated. It is with the view (would that we could say *HOPE*) of eliciting some suggestion that may tend to mitigate the sufferings of an afflicted member of our own profession.

Mentem mortalia tangunt!

The patient is a surgeon, retired from the East India Company's service, and in the 59th

year of his age. About nine years ago, a pound of gun-powder (in a cannister) exploded in his left hand, by which the bones of the thumb were fractured, and the soft parts about the palm of the hand much lacerated. The wound was dressed, and the case appeared to be doing well till the tenth day, when the sloughing process took place, which was followed by a profuse hæmorrhage, at first thought to be of venous blood. This was restrained by pressure; but it repeatedly recurred, and proved to be arterial. Several attempts were made to secure the vessel by ligature, but all in vain. Two medical gentlemen (Dr. S. and Mr. C.) advised ligature of the radial artery. The vessel was taken up by the latter gentleman, but unfortunately the radial nerve was included, and when the ligature was drawn, the patient started up involuntarily from the recumbent to the perpendicular posture, and felt a most dreadful pain dart from the occiput to the forehead. This pain was of short duration, but ever since that time he has been subject to headach. The hæmorrhage returned the same day, and Dr. S. in hopes of reaching a sound part of the palmar arch, removed the thumb, at its carpal junction. This operation also failed, and hæmorrhage again returned during the night. Being now much reduced, the patient himself determined on amputation, and the operation was accordingly performed the same night. But new misfortunes seemed destined for the unfortunate patient. While the surgeon was in the act of sawing the bones, the assistant let the soft parts fall into the teeth of the saw. "The pain," says the patient, "at this moment, was most exquisite; that produced by the circular incision was pleasure compared with it. The sensation was as if melted metal were poured into the wound." One or two more strokes of the saw completed the operation, and the pain ceased. Before the wound healed, two sloughs came away in the direction of the blood-vessels, nearly three inches in length, after which cicatrization proceeded rapidly. But great pain, referred to the lost hand, continued, and the patient felt as if the left hand was still attached, and in a high state of inflammation, with the fingers rigid and immovable. There was also a sense of pain in the region of the cervical vertebræ, with distressing headachs, especially when any acidity prevailed in the stomach. Nevertheless the appetite continued excellent. With the view of getting rid of these painful sensations, the patient visited Edinburgh, London, and Paris, where he consulted the most eminent of the faculty in each capital. The majority of these recommending a second amputation of the arm, as the most effectual means of relief, the operation was performed by Mr. Wardrop, between three and four years ago, in London. His evil fate pursued him from North to South! In about twelve hours after the operation, hæmorrhage took place, and Mr. W. was obliged to open the wound to search for the bleeding vessel. This opening of the stump gave him more pain than

all the operations he had previously undergone! The stump, after this, healed very quickly; (the amputation was performed five or six inches above the elbow) but, alas! the original sensation referred to the lost hand remains as intense as ever! Since the last operation, the patient has been gradually losing ground, and, with the exception of a good appetite, he is suffering under all the usual symptoms of dyspepsia. In addition to the pain referred to the absent hand, the patient is harrassed with constant spasms in the biceps and other muscles of the arm, and subsultus. There is also a continual tinnitus in the left ear. He takes a good deal of exercise, but still his sufferings are on the increase. Every thing he eats is disposed to turn acid, and when acidity obtains in the stomach, all the above-mentioned phenomena are greatly exasperated. "I find there is a small hardened portion of substance on the face of the stump, connected with the muscles, very painful on pressure, (the sensation always referred, even then, to the lost hand) and which appears to me to be a matting of nerves."

Previously to the last (second) amputation, Sir Astley Cooper advised merely the removal of the extremities of the nerves on the face of the stump. Mr. Abernethy was averse to any operation, and recommended blue pill. We have ourselves consulted several eminent surgeons and physicians, but their opinions have been very various. Sir Henry Hallford is of opinion that the extremities of the nerves on the face of the stump are in a state of disease, and are the cause of the patient's sufferings. He recommends another amputation, which he has known to succeed in two instances. We forbear to state any opinion on the subject, at present; but solicit the opinions of others. The patient is employing every means of improving the general health, and especially the state of the digestive organs.

It will be acknowledged that there is hardly to be found on record a more melancholy, unfortunate, or distressing case, than that which is here sketched out. As occurring in the person of one of our own profession, it is doubly interesting, and calculated to call forth our sympathy. Any suggestion communicated to the Editor of this Journal will be conveyed to the afflicted patient.

From the Medico-Chirurgical Review.

REMARKABLE CASE OF NEURALGIA.

By Mr. Dod.

Among the numerous suggestions that have been transmitted to us respecting the distressing case of neuralgia, published in the present Number of this Journal, there is a case related by Mr. Dod, late of Bath, and now of Caroline Street, Bedford Square, which we deem it a duty to communicate to the public, and that in the words of the communicant.

"The distressing case of neuralgia inserted for consultation in a recent fasciculus of the Medico-Chirurgical Review, induces me to communicate some particulars of a most inveterate case of this complaint, which occur-

red in the person of an officer, who had been most dreadfully lacerated by a tiger in the East Indies.

"The patient was a Lieutenant Saunders, (now Captain) of the East India Company's Service, about 38 or 40 years of age. This gentleman, after having resided in India about eight or nine years, was recommended to return to England on account of a liver-complaint, the sequela of a *jungle fever* he caught during some military operations in which he had been engaged in the country. After a short residence in England, his health being restored, he again returned to India. Upon his return, and during some part of the Poona war, in which he was conspicuously engaged, he one day incautiously approached a tiger, which sprang at him, and lacerated him in a most dreadful manner, destroying with its claws almost all the pectoral muscle, and other motors of the humerus, of the left arm. The tiger having left him, he lay in this mangled condition for a considerable time before assistance could be procured, during which interval he bled profusely. He recovered from his wounds; but there supervened one of the most distressing neuralgic affections of the body that can well be imagined. He became afflicted with violent headaches, which increased to such a degree of severity, as sometimes to deprive him of reason. Coupled with these distressing headaches, there was great pain in the lacerated parts, with subsultus of the muscles and tendons, which frequently extended to those of the body, giving to the spectator the idea or appearance of its being an epileptic fit with which the patient had been seized. His digestive organs were much disordered, and his food in general disagreed with him. When his stomach was most out of order, all his sufferings were exasperated. These distressing complaints continued to increase in severity from the time of the accident until I saw him, about two years ago, at Truro, to the neighbourhood of which place he had retired to pass the remainder of his miserable life, after having sought relief from some of the most eminent of the faculty in London and other parts of this country. When I saw Mr. S. he exhibited a most distressing spectacle;—His body was emaciated—his countenance was pale—his lips blanched—and his features shrunk. The functions of his digestive organs were much disordered. His extremities were, in general, cold; and his pulse, which was small, beat about 120 strokes in a minute. When paying my second visit to him, I had an opportunity of witnessing one of those nervous seizures above-mentioned, and of noting its progress. The subsultus commenced in the muscles of the lacerated arm; then extended to the eyes and muscles of the face; and, lastly, over the whole body. Some of the muscles seemed in a spastic state, whilst others were in a state of subsultus. He did not struggle! In this condition he remained about ten minutes, and then gradually recovered. On the preceding night, he had suffered severe pain in the lacerated

parts, with violent headach; the latter symptom continued after the seizure. Although the subsultus frequently took place in the lacerated parts, yet it did not always extend to the body.

"I prescribed the following medicines, which had proved successful in a severe case of neuralgia a few years before.

"R. Extract. colocynth. comp.—extr. jalap.—extr. alois spicat. āā ℥ij. Mass. pilul. hydrarg. ℥j. Contunde et divide in pilulas xxx æquales.

"Capiat decoct. sarsapar. simp. ℥j. quotidie.

"Balneum calidum 3tio vel 2ndo die.

"I ordered him to take one, two, or three of the pills *every night going to bed*, so as to produce, the next day, two or three evacuations from the bowels. The sarsaparilla he took regularly every day, but the warm bath was not attended to so regularly as I could have wished.

"These were the *only* medicines and means made use of, until my patient perfectly recovered, which he did in *twelve weeks* from the time I first saw him. He embarked the following spring for India, and has continued in good health up to the last accounts I heard of him."

From the Medico-Chirurgical Review.

CASES OF PNEUMO-THORAX. M. RAYER. [Hospital St. Antoine.]

Of all the cases of pneumo-thorax, the most frequent is the opening of a pulmonary excavation into the cavity of the pleura. This accident is by no means so infrequent as some people imagine. Two cases have been witnessed in the above-mentioned hospital, in the course of a few months.

Case 1. *Pulmonary Tubercles—Perforation of the Left Lung—Pneumo-thorax—Considerable Displacement of the Heart.*

Sophy Gonce, aged 23 years, married, and the mother of one child, became affected with catarrh and palpitation of the heart some time previously, and stated that about six weeks before her entrance into hospital she felt something give way, while in the act of coughing, followed by great difficulty of breathing, [obliging her to remain in a particular position, to be noticed presently] palpitation in the *right* side of the chest, and some spitting of blood. On the 11th of March, the day after she entered the hospital, she presented the following phenomena:—The respiration, short and embarrassed, compelled the patient to remain, day and night on her knees and elbows in bed, the trunk inclining a little sometimes to the right, sometimes to the left. On percussion, the whole of the left side of the chest was extremely sonorous, while the right side sounded dull. The breathing was loudly heard in the upper part of the right side of the chest—no respiration in the left side. In the act of strong inspiration, however, a curious sound was heard through the stethoscope,

resembling the blowing of air into a large bottle, (*respiratio amphorica*)—while, in gentle respiration, the tintement metallique (or sound of a drop of water falling into a bottle half full) was distinctly heard. The pulsation of the heart was evident in the anterior part of the right side of the chest. M. Rayer wrote down in the case-book, as diagnosis—*“pulmonary phthisis—aperture of an excavation into the left pleura—communication of one of the bronchia with this cavity—heart in the right side.”* M. Rayer thought this last was congenital; but in this his diagnosis was wrong. The symptoms above described continued, with little variation, till she died, on the 29th of March.

Dissection. The left side of the chest appeared more bulged out than the right, and the intercostal spaces wider. When the left side was opened, a strong gust of air rushed out—the lung was found to be almost annihilated, and the pleura covered every where with false membranes. An aperture was readily discovered in the lung, through which the air escaped into the cavity of the chest, when a pair of bellows was applied to the trachea. On more minute examination, a small excavation was found at this place, communicating with one of the bronchia. In the right side there was nothing particular. The heart had evidently been pushed over by the air in the left side of the thorax. There were tubercles in both lungs.

Case 2. Pulmonary Tubercles—Perforation of the Left Lung—Pneumo-thorax—Displacement of the Heart.

Lemaire, aged 24 years, married at the age of 15, and has borne six children. She entered the hospital on the 17th April, 1828. Stated that she had had some attacks of hæmoptysis the preceding year—and always brought up much expectoration, with very little cough. On examination, pectoriloquism was heard under the right clavicle—the respiration audible behind on both sides. Percussion did not elicit any thing particular. On the 25th April, the patient was found sitting on her bed breathing very laboriously, and complaining of an acute pain under her left breast. On examination by percussion, the left side of the thorax resounded very loudly—the respiration was extremely short, and incapable of being performed in the recumbent posture. When the ear was applied to that side no respiratory sound could be heard, but only the *“TINTEMENT METALLIQUE,”* as in the former case. Succussion was practised, and a fluctuation was distinctly heard in the chest. The right side was also sonorous, in a natural degree, and pectoriloquy was recognised under the right clavicle. The patient was occasionally seized with a paroxysm of coughing, during which she brought up a trifling expectoration, exhaling a most intolerable odour. The lower and anterior part of the right side sounded dull, on percussion, and here the pulsation of the heart was distinctly heard. The tongue was red—there was thirst—inclination to vomit—diarrhœa. *Diluent and ab-*

stinence. Between the 25th and 30th the patient continued in nearly the same state, and she was visited by several physicians, among others M. Bricheteau, all of whom agreed that the disease was pneumo-thorax. The left side of the chest became more and more bulged out, and the intercostal spaces wider. Between the 1st and 4th of May, the symptoms were a little mitigated, and the patient walked about the ward a little every day. On the latter day, she was suddenly seized with an increase of the dyspnœa, and quickly expired.

Dissection. MM. Rayer, Kapeler, and Bricheteau, assisted at the examination. The right cavity of the chest was first opened, and there the heart was found to be located, being pushed over from the opposite side. The pleura of the left side was seen to be distended with air, and quite transparent. On being opened, a quantity of this fluid rushed out. The cavity contained a moderate quantity also of sero-purulent fluid, mixed with shreds of false membrane. The lung of that side was reduced to one-eighth of its natural dimensions, and compressed against the spine. The whole of the pleura was covered with false membrane, very thin in substance. A small aperture of communication between the air-tubes and the cavity of the chest was discovered in the contracted lung. In this channel of communication there was a small excavation, into which two or three bronchial tubes opened. Both lungs contained tubercles, and there was some bronchial inflammation.

Remarks. The foregoing cases are very interesting in themselves; but we think our readers can hardly fail to perceive that the accuracy of the diagnosis was not turned to any practical utility in the way of relief to the patients. Now we must acknowledge that the two individuals above-mentioned did not present, on dissection, any organic disease incompatible with life—or, at least, with a prolongation of life. They evidently died in consequence of the effusion of air into the cavity of the chest compressing the lungs, displacing the heart, and impeding the vital function of respiration. They were, in fact, placed as nearly as possible, in the same situation as individuals who had been wounded in the lungs by a small sword, or by the fractured ends of the ribs. Why, then, hesitate to make an opening through the intercostal spaces, and extricate the effused air? Every time the patient breathed, some air was forced out into the cavity of the pleura, and it could not get back again through a valvular opening. The obvious remedy was a free exit from the chest, till the channel of communication closed. The operation could not have added to the danger of the patients, and it would have given them a temporary relief at least. We are the more surprised at the inactivity of the medical attendants, in the above cases, seeing that Laennec advises the operation “whenever there is imminent risk of suffocation.” We shall introduce an extract from Laennec, touching the treatment of pneumo-thorax.

"*Treatment.* The exact diagnosis of pneumo-thorax, and of each particular variety of it, must not be considered as a matter of purely speculative knowledge, or as useful only in respect to the prognosis of the disease. It is extremely probable, as has been remarked by Hewson and Ruller, that simple pneumo-thorax is the case which holds out most prospect of success from the operation of puncturing the chest. This opinion is corroborated by an observation of Riolan, who informs us that he had several times seen the operation of paracentesis successfully performed on patients considered as affected with dropsy, but from whose chests only air made its escape. In cases of this kind, the puncture with the trocar would unquestionably be preferable to incision. But I would here remark, that, exclusively of the great infrequency of the simple pneumo-thorax, I think it must be generally considered as of no great severity, the gas being more readily absorbed than the liquid effusion. I think myself justified, at least, in drawing this conclusion from the frequency of gaseous effusions in other situations, which disappear spontaneously, and frequently in the course of a few days or even hours. Of this kind is the pneumo-pericardium, and the various kinds of *pneumarthrosis*, particularly that of the knee, which so frequently arises during the convalescence from articular rheumatism, as well as in other circumstances. On this account, before proceeding to puncture the chest, we ought to endeavour to excite absorption by aromatic and spirituous frictions, and by the internal use of slight tonics.—Pneumo-thorax complicated with liquid effusion and still more with pulmonary fistula, is a case of a most serious nature, and leaves little hopes of a cure being effected. This, however, must not be considered as quite impossible, even in the severest cases. I formerly proved the possibility of the cicatrization of tuberculous excavations; and the observations of Bacqua, Jaymes, and Robin, (*Journ. Gen. de Med.* 1813,) to which I could add a more recent case of the same kind (I mean cases where the patients recovered after the operation of empyema, although the injections thrown into the wound were found to be discharged by the mouth) sufficiently prove, that, even in such cases, we may attempt this last resource with some prospect of success. Even Nature by herself may sometimes overcome more or less completely, a lesion of the kind in question, as I shall show in a case to be detailed at the end of the present chapter. I saw another case of the same kind in 1820, in a man who came on horseback thirty leagues, to consult me. In this person there was every sign of the complication in question existing on the right side. The disease was of two years' standing, and nature had already made considerable progress towards a cure, as the affected side was evidently contracted. I ascertained in 1824 that this man was still alive, and attending to his business; he was improved in health, though still an invalid. It cannot be denied, however, that cases of this

kind are exceptions to the general rule; and that the two last varieties of pneumo-thorax afford much less chance of success from the operation of empyema, than the simple effusion, whether of air or liquid. Accordingly, I think that we ought never to attempt this operation in such cases, *unless there is imminent risk of suffocation, or rapidly increasing emaciation and debility*; and never after the long continuance of the disease, unless the lung on the sound side, gives no indication of tubercles. In every other case, I think that we ought to content ourselves with supporting the patient's strength, promoting absorption by the means formerly mentioned, and by a regimen regulated according to the state of the digestive functions,—neither too rigid nor too analeptic."

From the Edinburgh Medical and Surgical Journal.

CASE OF SPONTANEOUS FORMATION OF A PRETERNATURAL ANUS, *with Steatomatous Tubercles of the Liver, where life continued long under extraordinary circumstances.* By WILLIAM HENDERSON, M.D. Perth.

April 3, 1826.—G. D., æt. 8 years, has been from August last liable to severe fits of obstruction in his bowels. With this exception, he has been a healthy and vigorous boy from his infancy. After one of these attacks, which was overcome by croton oil, scammony, gamboge, &c., his bowels acted regularly without the aid of medicine; his appetite, however, did not return; he became daily more feeble, and lost flesh very fast; the skin was hot and dry; the tongue moist, but furred; the pulse 120; his stools passed copiously every morning, clay coloured, and of yeasty consistence, with glistening scum on the surface; urine seldom passed, except when his bowels were moved, and then, and at all other times, with much pain; the little food he took was often rejected. Three days after the yeast-like stools appeared, he entirely lost the power of his lower extremities.

As the idea or appearance of medicine excited vomiting, one grain of calomel was mixed in his food three times a-day, without his knowledge. The food so medicated was at first almost immediately rejected; after a little time he generally retained it for one or two hours. Matters went on in this way for ten days, when his bowels became more relaxed. In place of one copious stool in twenty-four hours, he had now three or four, while, at the same time, his abdomen rapidly enlarged, and was tense and painful to the touch. After this he recovered the use of his limbs, and the urinary symptoms entirely disappeared. His abdomen, however, continued to enlarge, the discharge from his bowels to increase, and the other symptoms also to gain ground; I therefore ordered him to be put into a warm bath impregnated with nitro-muriatic acid. After the bath he slept better, his appetite at the same time rather improved; but the fatigue

of moving him was more than his feeble strength could bear, and I therefore substituted sponging for the bath.

At this period my friend Dr. John Thomson of Edinburgh was consulted by letter. He recommended assafœtida and anodyne enemata. The enemata had the effect of greatly diminishing the alvine discharge, but the abdomen enlarged in proportion, and the vomiting, which had not been troublesome from the first time he was bathed, returned. After being used for three days without success, the enemata were discontinued, and in two days more the discharge from the bowels resumed its former quantity and quality, and his stomach again retained the little food he took. His body became emaciated to the last degree, and his strength so much exhausted that he was unable to turn himself in bed without assistance. His abdomen was greatly enlarged, and very tender all over, but particularly about the umbilicus.

May 25th.—His case appeared to myself and all who saw him to be hopeless. As a last resource, I determined on making trial of iodine, and began with ten drops of the saturated tincture morning and evening, gradually increasing the dose to thirty drops. From this time he improved daily; his appetite in a few days became keen; the abdomen gradually decreased in size, and every day became less tender; his strength and flesh also improved rapidly. Ten days after he first took the iodine the right testicle became painful and enlarged. As the iodine he took rested well on his stomach, I gave him an additional dose daily, at first fifteen, afterwards thirty drops; cooling lotions being at the same time applied to the testicle. In seven days the left knee swelled and became stiff and painful; but the testicle showed symptoms of amendment, and fifteen days from the time the knee began to swell, all traces of disease in the testicle were gone. The alvine dejections also improved; the skin became cool and moist; the pulse 130; his appetite good; and he slept well.

June 15th.—The bowels have been regular ever since he took the iodine. (27th.) The belly is still decreasing in size, and is no longer tender. His knee is still a little stiff and swelled, but is fast improving,—in other respects, too, he is every day getting better.

July 1st.—I sent him to sea-bathing, with orders to go on with the iodine, and to have the body sponged night and morning with sea water. (8th.) In consequence of a fall to-day, he struck the left knee on a stone, and was attacked with such acute pain in the joint as rendered every attempt at motion intolerable. As soon as I was informed of the accident I directed him to be brought home; but eight days elapsed before he could be moved. (16th.) On returning home this day I found the knee swelled and painful on pressure and motion, but his health otherwise as good as on the 1st. (19th.) He has been five days without iodine. A fresh supply was ordered, and the same doses given. Next day he complained of pain in the bowels, was dull and lan-

guid, and had little appetite; the belly, however, was almost of the natural size, soft, and hardly at all tender, and the swelling of the knee was diminishing. The iodine was therefore omitted, and on the following day the pain in the bowels had ceased, his appetite had improved, and he was more lively. On the 25th, the iodine was resumed in the dose of fifteen drops twice a-day, but the paroxysms of pain of the bowels returned so severely that it was abandoned on the 26th. Next day the pains had abated, his appetite, which had entirely ceased, returned, and the evacuations were regular. The tormina, however, continued to recur at times for seven or eight days after; but on the 4th of August they ceased entirely, the appetite all the time improving, the evacuations continuing natural, but the pulse generally about 130. There was now fluctuation on the inside of the knee, and I proposed to evacuate the matter; but he would not give his consent till three weeks after, when it was evacuated with the lancet. From this time he improved steadily till December.

In December he had a very severe attack of whooping-cough, which he did not get entirely quit of till spring. During the winter the knee discharged a great deal of matter. In July 1827 I sent him to the coast, but he returned in three weeks not much benefited, as the weather had been very cold and wet. The knee then began to improve; but in proportion as it looked better, he lost flesh and strength, till he was sent again to bathing quarters, where his spirits, appetite, and general health improved somewhat. About the middle of September the discharge from the knee dried up almost entirely; but from that time his appetite and strength failed; the abdomen began to enlarge, and to be affected with twitching pain round the naval; he had frequent vomiting after taking food, the bowels became relaxed, and in a few days his emaciation was very much increased. At last the umbilicus became tender and discoloured, and on the 29th it gave way and discharged a great quantity of matter. On being suddenly summoned to visit him during the night, I found a small opening in the centre of the umbilicus, through which feces and particles of undigested food passed freely. A compress and bandage were applied, and he was directed to be kept very quiet. Next morning I learned that he had slept well, and had a natural evacuation; his appetite was improved, he had no pain, and no inclination to vomit. On the following day he continued to improve, and was less apprehensive of himself. On the 11th the discharge from the umbilicus had ceased. Till this time his improvement was progressive. Now, however, his appetite failed, and a profuse diarrhœa commenced, which, notwithstanding the liberal employment of kino and catechu, wine and brandy, continued excessively till the 15th, and reduced him to an extreme state of weakness and exhaustion. The discharges by stool then gradually became less abundant, when at length on the

18th, the umbilical discharge returned profusely, and relieved him much. Matters went on in this way during the rest of the winter. When the wound discharged freely, which it generally did for three or four days, his appetite improved, he was more cheerful, and slept better; but when the discharge diminished, which usually was the case for six or eight days, he had sickness and vomiting of food. When it dried up altogether, which was the case for a week at one time, it brought on the same profuse alvine discharge as above, and brought him again to the point of death, until a fresh discharge relieved him.

Early in November 1827, some fulness and hardness were first observed in the epigastric region, and continued to increase till his death. Towards the end of January 1828, small circular elevations were felt on the surface of the fulness in the epigastrium; these also went on increasing. As the enlargement increased in the epigastrium, the quantity of food he could take at one time diminished, and latterly almost every attempt at taking food brought on vomiting. During all this period his bowels were pretty regular; the tongue was always quite clean and moist, and of a bright cherry colour; the pulse always about 130; the skin generally natural. The disease in his knee, which had been in a state of inactivity from September 1827, in February 1828 began to throw out more matter.

February 24th.—The stomach will now scarcely receive any thing. He complains often of sickness, and faintness, and has not been able to be out for the last two days; bowels very lax; extreme emaciation. Notwithstanding his extreme weakness he cannot be persuaded to lie in bed, on account of the uneasiness he feels in the recumbent position. He finds most ease in a sitting posture, with his head resting on a pillow placed on a table before him.

Matters went on in this way till the 2d April, when he died. For six hours previous to his death his sufferings were extreme, and their termination afforded no small relief to those who witnessed them.

Dissection.—Twenty-four hours after death, my friend Dr. John Stewart kindly assisted me in the examination of the body. External appearance. Extreme emaciation; the wound in umbilicus gangrenous; great distention in the epigastrium. On laying open the abdomen the liver was the first object that attracted our attention; it occupied the whole of the upper part of the abdomen, and by its great size had forced up the false ribs on both sides. The muscles, peritonæum, and liver, were all found firmly adhering together, and could not be separated but by the scalpel. The convex surface of the liver was profusely studded with steatomatous tumours, varying in size from a pullet's egg to a pea, and all deeply imbedded in its substance. We were obliged to dissect the liver from the diaphragm, bowels, and spleen, to which it firmly adhered. After tying a ligature round the extremities of the stomach, and dividing the œsophagus

and duodenum, the whole were removed out of the body. The stomach and pancreas were found closely adhering to, and indeed imbedded in the substance of the liver; and after searching in vain for the right kidney elsewhere, it also was found buried in the substance of this gland. The tumours were smaller, and much less numerous on the concave than on the convex surface of the liver. The liver weighed four pounds ten ounces, and its substance was of a pale colour, and so soft as to give way under moderate pressure. The gall-bladder was moderately distended with apparently healthy bile. The pancreas adhered closely to the liver and stomach, and was completely steatomatous throughout its whole substance. The stomach was very small, and much thickened where it adhered to the liver and pancreas. The kidneys were larger, softer, and of a darker colour than usual, but presented no other form of disease. The parietes adhered so firmly to the viscera, that they could not be separated without the scalpel, except at that part of the *parietes abdominis* which formed the anterior wall of the sac about to be described. The intestines were of a deep bluish purple colour, highly vascular, and everywhere agglutinated to one another, and to the surrounding organs.

The opening through the umbilicus was found to run into the arch of the colon; the opening into which was from three and a-half to four inches in length on the under side. The bowel was much thickened, was in a state of great expansion, and formed the superior wall of a sac, which, when in a state of distention, we supposed might contain from sixteen to twenty fluid ounces. The anterior wall was formed by the *parietes abdominis*, and the posterior by the intestines in a state of complete adhesion. The intestines here had their coats very much thickened, and their vessels gorged with dark-coloured blood. The sac contained feculent matter.

The mesenteric glands formed one congeries of tumours, exactly resembling those on the liver, and varying in size from a large walnut to a pea.

The bladder was free from all appearance of disease.

Thorax.—The lungs adhered slightly in many places to the pleura, were partially hepatized, and generally of a darker colour than usual; but no induration or any other form of disease was observed in their substance.

The heart was unusually small, and the pericardium in close adhesion to its surface in every part. A large pale-coloured polypus was found in each ventricle, but not even the appearance of blood. The head was not examined.

The morbid appearances now detailed were not less extraordinary than the symptoms during life, and cannot fail to be highly interesting to the pathologist. The close adhesion which was found to exist between every part of every organ in the abdominal cavity must, I think, have been the consequence of the violent abdominal symptoms he had previous

to 25th May 1826, and must have existed from that period; for from about the middle of the following month to the time of his death, he did not complain of pain or tenderness of his belly, with the exception of that which existed about the umbilicus before it burst. The seat of this tenderness was found to correspond exactly with the size of the sac above noticed. That he was indebted for the last six months of his existence to the adhesion of the abdominal viscera, by which the contents of the colon were prevented from surrounding the organs contained in that cavity, I think will not be doubted. The light and the size of the room in which the body was placed, and the time allowed for the examination of it, precluded the possibility of the dissection being conducted with that minuteness and attention which such an extraordinary accumulation of diseased structure required. Enough, however, has been observed to render the continuance of life under such circumstances little less than miraculous. And at last his life seemed to us to have been terminated by the mechanical pressure of his enormous liver, rather than by the change of structure that disease had made in it or any of the other viscera. This pressure satisfactorily explains the inability of the stomach to receive food, and also his partiality for a sitting posture. It was also owing to this great pressure of the liver that the spine had yielded; for the concavity of the spine was found to correspond exactly with the convexity of the liver lying over it. That the action of the heart was impaired by the adhesion of the pericardium cannot, I think, be doubted. The uniformity of its action was very remarkable;—for the last two years and a half of his life I never observed his pulse to vary from 130. From the excessive accumulation of disease in his system, and the well known sympathy existing betwixt the different parts of the human body, it would naturally be supposed that life to him would have been destitute of enjoyment. But the case was otherwise; for, with the exception of what he suffered from the knee and from hooping-cough, the term uneasiness would better express his sufferings from June 1826 till the time of his death, than that of pain. It will readily be here understood that I speak generally. His constancy and despatch in his ordinary avocations were only exceeded by the vigour and acuteness of his mind. His reasoning faculties were of the highest order. A mind like his, necessarily often pondering on his bodily sufferings, could not fail to be inquisitive. Consequently his questions to me were neither few nor always easily answered; if my answer happened to be unsatisfactory, I was immediately called on to support it by a reason; and if any fallacy or feebleness existed in my arguments, they were either immediately pointed out by him, or dexterously turned against me.

From the *Lancet*.

A CASE OF HYPERTROPHY AND RUPTURE OF THE URINARY BLADDER.
VOL. III.—I

TURE OF THE URINARY BLADDER.
By ARTHUR GARRY, M.D.

Benjamin Morgan, æt. 32, of the sanguineo-melancholic temperament, small in stature, but stoutly made, had a gonorrhœa about five years ago, of which he was quickly cured; but shortly after, the stream of his urine became smaller than usual. It continued so for a length of time, but as he suffered no pain, he did not consider that any evil consequence would result. He continued in this state for more than three years, without any unpleasant symptom exhibiting itself, more than that he was obliged to increase his efforts to discharge the contents of the bladder. Within the last year, the difficulty in passing urine became much greater, and, at intervals, was somewhat distressing; but it never amounted to an actual stoppage till the present attack. During all this time he pursued his business—that of a newsman, serving newspapers at the houses of citizens and at public offices, his general health being pretty good. He occasionally indulged in the use of spirituous liquors, but was not a habitual tippler. He never took medical advice for the urinary symptoms, as he considered his disease to be gravel, which, though it might annoy him, yet he believed it would never kill; hence he neglected to take any remedy.

When I was called to see this man on Friday, the 25th ult., at 22 Charles street, I learned the above particulars. I found him in great agony: his abdomen was greatly distended, and so painful that the slightest touch occasioned him to scream; there was at intervals, or when he took any drink, violent vomiting; his pulse was quick and tremulous, his countenance miserably anxious, and his breathing very much hurried. These symptoms, as I was informed, came on rather suddenly. The evening before, he was in his usual state of health, and went to stool, when, without any previous pain, he felt something, as it were, jump up suddenly in his belly; and from that moment he became unable to pass any urine, neither could he discharge the contents of the bowels. After some little time his belly swelled, and he was very sick. An apothecary was sent for, who introduced, or attempted to introduce, a catheter; for I could not learn whether the instrument had passed into the bladder or not. No urine, or fæces, had been discharged for nearly twenty hours before I saw him. I attempted to introduce a tolerable-sized catheter which I had with me, but I found it impossible to get it in further than about two inches and a half, the urethra being hard and contracted within that distance of its orifice. From the great distention of the abdomen, the feel of fluctuation even as high as the epigastric region, and the man stating that he did not feel as if he had any water to make, I was led to suspect that the bladder had burst. While I went to obtain a small sized catheter, I ordered him to be bled, to have pills of colocynth, calomel, and opium, followed by a terebinthinate enema, and to have occasional doses of effervescing mixture. I also directed that a

warm bath should be procured. On my return, I found that the medicines had produced one copious dejection, but no urine had passed; and he expressed himself much relieved by the bleeding and the discharge from his bowels. As a warm bath could not be procured, I tried without, to introduce a very small-sized catheter, which, after much resistance and some delay, I got into the bladder, but no water came. This confirmed my suspicion that the bladder had burst. I felt something opposed to the end of the instrument, which, from its elastic feel, I thought to be a polypus of the bladder. I withdrew the instrument, and gave my opinion to his friends that his life could not be preserved. In the course of the evening all his symptoms became aggravated; violent stercoraceous vomiting came on, and he expired in the course of the night. I obtained leave to open the body the next day, when the following appearances were observed:—On cutting through the parietes of the abdomen into its cavity, there issued out about three quarts of urine. The peritoneum was much thickened with flakes of coagulable lymph dispersed upon it. The villous coat of the stomach was very vascular, and somewhat thickened. The lining of the duodenum was more vascular than natural; but, on the whole, there were little more than signs of incipient inflammation throughout the remainder of the intestinal canal, which was occupied entirely by flatus. I put down my hand into the pelvis, to feel for the bladder, and discovered it projecting a little from under the pubes, in the form of a hard, scarcely elastic mass, like to a scirrhus uterus. By removing the intestines, I viewed it *in situ*, and on the posterior part I found it thin for about an inch square, in the middle of which was a hole with three flaps, evidently produced by rupture. There was no mark of ulceration. The sides, in all directions, with the exception of this small portion, were increased in thickness to about half an inch, hard, and almost as unyielding as cartilage. In cutting, it offered much resistance to the knife, giving a sensation to the hand as if the blade was passing through bundles of whip-cord. The interior presented large bundles of white strong cords, resembling small catgut strings, intersecting each other like the muscoli pectinati in the heart, but more prominent, and leaving the interstices more marked and deeper. The mucous covering on those was smooth and glossy, but scarcely thickened. The cavity of the organ was lessened in all directions, and could not contain more than four or five ounces of fluid. The space on the posterior part, which remained thin, was the only portion which was yielding, and this seemed to have been much stretched before it gave way. Round the spot where the rupture took place, the characteristics of the parietes of this organ were lost; as, by the slightest press with the finger, it would tear with edges, as if a cutting instrument had been applied. As I was anxious to get it away, for the purpose of making a preparation, I was obliged to effect my purpose

clandestinely, and with expedition, and I cut it out, taking the prostate gland with it. This gland was a good deal diseased, having a proportionable increase in size to the coats of the bladder. It was hard and unyielding, and cut like semicartilage. If cut from the bladder, by itself it would weigh about an ounce. There were several strictures of long standing in the course of the urethra, and it was these, and the diseased state of the prostate gland, which gave such resistance to the introduction of the smallest sized catheter. The ureters were enlarged to some distance up from the bladder. I did not get time from the friends to examine the kidneys, and all I could learn was, that the man never complained of any unpleasant sensation in the regions of these organs during life. I have made a preparation of the bladder and prostate, which I have presented to my talented friend, Dr. Davis, of this city, for the instruction of his pupils.

The only inference which I would venture to make from the preceding imperfect detail, is, that the strictures in the urethra were the primary cause of the increased growth of the bladder. They continued for more than four years, offering resistance to the passage of the urine, and consequently for the same space of time the muscular fibres of the bladder were excited to more than usual efforts to overcome by their force, the resistance which was made. Increased exercise of muscular fibres, caused them to increase in strength and growth. Here there was evident cause for the more than ordinary exercise of the muscular fibres of the bladder, and the result was a more than ordinary thickness and strength. I do not think it surpassing probability to believe, that, if the strictures had been attended to in time, and had been cured, that the morbid growth of the parietes, and the other morbid appearances of the bladder, never would have come on.

From the Medico-Chirurgical Review.

CASE OF CATALEPSY, COMBINED WITH MANIA. By Dr. BURROWS.

We remember hearing a remarkable and highly interesting case of catalepsy combined with mania, read at the Medico-Chirurgical Society, about three years ago, and wonder much that it was not published, seeing that many cases of far inferior interest have seen the light through that channel. On looking over Dr. Burrows's late work on insanity, we recognised the case, and find that the patient had been in Dr. B.'s asylum while afflicted with her distressing malady. As it involves some important etiological and pathological considerations, we shall condense its most important features in this article.

Case.—A young female, of education above her situation in life, (which was that of a house-keeper,) after being tempted to live in concubinage, had the proffer of marriage, provided the ceremony took place the very next day

after the proposal. The agitation of mind, on this occasion, brought on a premature eruption of the catamenia, and in this state the marriage was solemnized, though with great reluctance.

"The new-married couple set off in the evening, to travel in a stage-coach to the place where they were to sleep. During the journey her passions were highly excited, and subsequent intercourse was attended with much pain. After having slept about an hour, she suddenly awoke in a violent alarm, saying, she had had a frightful dream, and then complained of a dreadful pain in her head. Presently she jumped out of bed and flew to the window, which her husband fortunately prevented her from opening; she then for a short time was unconscious of all around her, and fainted. On recovery, she became delirious and furious. The catamenia ceased from this time."

The medical practitioner who was called in, bled, purged, leeches, blistered, bathed, and starved the patient—and, in about three weeks, the symptoms gradually abated. A visit from her husband, at this juncture, together with indiscriminate communication with friends, produced a relapse, and mania, though in a mild form supervened. This subsequently changed to melancholia. In a fortnight after this she was removed to Dr. B.'s establishment. Her countenance was sullen and pallid; the eyes heavy, turgid, and cast downwards; the tongue foul; bowels inert; the pulse rather full and slow; the surface of the skin, and especially the extremities, below natural heat. She answered few questions, and those only in monosyllables; and she was very averse from moving. The patient was observed to make frequent pressure on her head, and the carotid arteries beat stronger than any others. The scapula was hotter than natural, and the extremities were cold. The head was shaved—the occiput cupped—and cold lotions applied to the vertex. The bowels and stomach were cleared by purgatives and emetics. This was on the 10th November. On the 24th, some ptyalism came on from calomel that had been taken, and all the symptoms were greatly ameliorated. On the 8th December the ptyalism ceased, and all the bad symptoms speedily returned.* On the 18th December we find her assuming the cataleptic character.

"She preserves the exact posture, whether lying, sitting, or standing, in which she is placed; eats mechanically whatever is put into her mouth; if spoken to sharply, the only notice is a sardonic grin. The skin resembles white wax or marble, and is again colder than natural; feet very cold; pulse feeble; respiration undisturbed and scarcely perceptible; eyes fixed and turned upwards; alvine dejec-

tions natural; sleeps well, and when taken up in the morning, is dressed like a helpless infant."

There was little change during the next fortnight. During the cataleptic paroxysms, the carotids were observed to beat with great quickness and strength, while the pulse at the wrist was feeble and slow. This circumstance is utterly unaccountable, and nothing but the assertion of Dr. B. would induce us to believe it. If we saw the fact ourselves we would distrust the evidence of our own senses.

On the 1st January all the symptoms were suddenly aggravated. She became a perfect statue; sensation and volition were quite suspended; the evacuations were quite involuntary; there was a constant sardonic expression in her features; mouth open, and a large quantity of saliva flowed unrestrained; the eyes were immoveable, and imbedded in the upper eyelids; every limb retained the position in which it was placed; even the most painful was endured without any apparent suffering, and that for a space impossible to be preserved by any one in health. She resisted every attempt to rouse her by moderate pinching and pricking. These paroxysms, varying in intensity, lasted through the day. She now exercised but one voluntary animal function—deglutition. Various remedies, including local depletion from the head and spine, were employed, but with little effect. On the 12th February, "she arose in the morning in possession of every faculty, both corporeal and mental." She voluntarily assisted in domestic affairs, and talked rationally. She had a perfect recollection of all that passed prior to the attack of catalepsy—all since was a blank. It was mortifying to find her torpid and mute the next day. She was cupped and vomited—and a seton was inserted in the nape of the neck. At this period she removed from Dr. B.'s asylum, but he learnt that she derived very great benefit from the seton—that the menses re-appeared—that she perfectly recovered—and has since borne several children.

"Many circumstances in this case indicate determination of blood to the brain: the interruption of the menstrual flux, the discordance between the force of the carotid and radial arteries, and the temporary relief always produced by abstracting blood by cupping from the head during the existence of the cataleptic symptoms, support this inference." 191.

We believe there is not a case on record which more distinctly shows the operation of moral causes in deranging the corporeal, and through them the intellectual functions. The case is altogether very remarkable and instructive.

From the London Medical and Physical Journal.

CASE OF CATALEPSY COMBINED WITH MANIA. By Jos. CANHAM, M.D.

In one of the late fasciculi of the *Medico-Chirurgical Review*, I find detailed a curious

* We think Dr. B. might have taken a useful hint from the above accidental occurrence. We should have been inclined to keep the patient under the influence of mercury for some weeks.—*Rev.*

case of catalepsy connected with mania. The only case of the disease I ever saw was likewise combined with mania. I am sorry that, from not being able to find the notes I took of the case, I cannot give you as minute an account of it as I wish.

B. M., aged about twenty, (apprentice to his father, a bricklayer,) became deranged, and in a few days was sent to St. Luke's, where he remained a year, and was then discharged, and placed by his friends in Warburton's asylum. In a few weeks his friends took him home. Two days after his return to Stevenage (where I then resided,) he was, during dinner, suddenly attacked with catalepsy. When I saw him, which was almost immediately, he sat perfectly motionless; his eyes open and immoveable; vision apparently lost, as he would allow a finger to be placed upon the eye without closing the eyelids; insensible to sound; face and hands quite pale, having the appearance of white wax; temperature much reduced; pulse at the wrist not to be felt. Upon an attempt being made to abstract blood, to the surprise of every one present, the arm, upon being raised, retained that position after the hand which had supported it was removed. One leg was now placed at right angles with the trunk: it would not retain this position, but, upon being placed about a foot from the ground, remained there, the patient being seated upon a chair of the usual height. He was now carried to bed, having every appearance of a dead man. I could not see that he breathed, but, upon applying the hand to the chest, a slight motion of the ribs was perceptible.

A very small quantity of blood was procured from the arm, not more than an ounce, (he did not appear to feel the incision with the lancet.) A few drops of ether, with camphorated mixture, was given him, but he made no effort to swallow. Flannels were heated and applied, and frictions used, without producing any effect.

I saw him every two hours from the time I first visited him, which was about two P. M. Until twelve, he remained without any change. He was likewise seen by Mr. Jones, who was then practising at Stevenage.

Early the following morning, he was in the same state, and had remained so during the night, according to the account of his brother and those who sat up with him. At about nine o'clock, a slight perspiration appeared on the face, which increased to a most profuse sweat over the whole body, and he shortly afterwards turned in bed, and soon spoke.—The excretions of urine, &c. were suppressed during the continuance of the cataleptic symptoms.

He now became morose and melancholy, which was the state he was in prior to this attack. I saw him for some days afterwards, and he continued in this state.

About six months afterwards, I was sent for to see him: he had then, without any interference of art, regained his intellect, but was lame from the nails of the great toes having

penetrated the skin on each side. When these were cured by the application of caustic, he returned to work.

It is about three years since the attack of catalepsy, and he is now perfectly well, as I heard of him very lately. His father was several times insane.

From the London Medical and Surgical Journal.

OBSERVATIONS SUR LES EFFETS THERAPEUTIQUES DE LA MORPHINE OU NARCEINE.—*Observations on the Therapeutic Effects of Morphine or Narceine.* By V. BALLY.*

Of the various poisonous substances employed by those unfortunate individuals who are prompted to put an end to their career of misery, real or imaginary, by resorting to the act of suicide, opium is the most common; it therefore behoves every medical practitioner to make himself fully acquainted with the effects of this substance on the system, as well as with the tests by which he is to discover, in doubtful cases, the nature of the poison employed. It is pleasing to witness the rapid progress which the science of medical jurisprudence is now making, but we are indebted for a great part of our knowledge of this subject to our continental brethren.

M. Séguin is supposed to be the first who gave a distinct analysis of opium. He communicated, in 1804, the result of his researches to the Institute. According to that account, opium consists, 1st, of a crystalline matter which he considered as an unknown principle (morphine); 2d, of a new acid endued with peculiar properties (meconic acid); 3d, of a bitter principle insoluble in water; 4th, of a soluble bitter principle; 5th, of acetic acid; 6th, of an amylaceous substance; 7th, of an oily substance. Little notice was taken of M. Séguin's communication at the time, nor did another memoir, by M. Sertuerner, in 1805, make any greater impression, and no further observations seem to have been made on the subject until 1816, when M. Sertuerner again called the attention of chemists and physicians to the active principle of opium, which he called morphine. Since that time several experiments have been made on animals with the different salts of morphine, as well as with the other materials contained in opium. From late researches it has been proved, at any rate rendered very probable, that the medicinal properties of this useful remedy depend chiefly on the morphine which forms a part of its composition.

M. Bally thinks it possible, in cases of poisoning with vegetable substances, to discover the kind of poison employed, by means of chemical tests. The attention of chemists has not been yet so minutely directed to the

* *Mémoires de l'Académie Royale de Médecine.*

vegetable kingdom generally as to the mineral. As very slight causes sometimes tend to bring about great and lasting effects in the moral world, we may, perhaps, trace the cause of the decided preference given to mineral over vegetable chemistry to the old notion that *gold* was to be expected to result from the combination of mineral substances only. Whether the preference be attributable to the insensible influence of this old golden notion or not, the fact is certain that chemists, even to the present day, have chosen to explore the bowels of the earth rather than the vital products which spring from it. It is probable that they have been fortunate in their choice, as the results of their labours have added considerably to the comforts of life. As the healing art, however, derives much aid from the vegetable kingdom, it is to be wished that some of our countrymen would devote a little more of their attention than they have hitherto done to an examination of its chemical properties.

Having given some account of the natural history and discovery of morphine, M. Bally proceeds to examine its therapeutic properties, and the tests by which it may be known in cases of poisoning.

The substance vomited by a dog which had been made to swallow twelve grains of acetate of morphine was a colourless fluid, without odour, slightly viscid. It turned frothy by agitation with solution of gum. It was about three ounces in quantity. Submitted to evaporation in a porcelain cup, it gave a small quantity of yellowish extract, of an odour of juice of meat, of a bitter taste, a little saltish, and it reddened tournesol paper. This extract, treated with boiling alcohol, separated into two portions, the one flocculent, insoluble, formed of the mucus and of the gelatinous matter; the other, soluble in this liquid, was evaporated to dryness. The latter, re-dissolved in a little water, let fall floccules of greasy matter. Submitted to slow evaporation, the aqueous solution gave a deposit of prismatic crystals, of a yellow colour, which presented the following properties: they had a bitter taste; a solution of them in water precipitated, by the addition of ammonia, in white floccules. Treated by concentrated sulphuric acid in a small glass tube, they disengaged a decided odour of acetic acid.

Dissolved in weak nitric acid, these salts immediately gave a dark yellow solution, approaching to the colour of blood.

This union of properties proved clearly that these crystals were acetate of morphine. The quantity obtained was about three grains.

The stomach of a cat which had been poisoned by twelve grains of acetate of morphine was boiled, for ten minutes, in six ounces of distilled water. The filtered liquor was evaporated and treated with alcohol in the way already mentioned. The alcoholic solution was slightly yellow, and it furnished by evaporation an extract of a similar colour, only a little darker, of a saltish taste, followed

by bitter, which manifested, by the addition of a few drops of nitric acid, a good yellow-orange colour, approaching to red; phenomena which proved the existence of a small quantity of acetate of morphine.

But it is remarkable that, in some instances, these reagents will not enable us to discover any trace of morphine in the stomach, intestines, heart, or in the blood taken from an artery a few minutes before the death of an animal which has been poisoned by this substance. A hound was poisoned by twelve grains, but no trace of it could be recognised in any of those parts. Two kittens died from the injection into the stomach of a solution of acetate of morphine, the one of five, and the other of eight grains. The stomach of that which had received the five grains showed unequivocal traces of the poison, easily distinguished by the reagency of nitric acid; whilst in the other nothing of the kind could be discovered. From these facts, and several others of a similar nature, M. Bally concludes, 1st, that it is possible, in many cases of empoisonment, to discover, by chemical means, sensible traces of vegetable poison; 2d, that it is always in the viscera to which the poison is first applied that we are to look for its presence, 3d, that the matter thrown up by vomiting shortly after the injection of the poison into the stomach contains sensible quantities of it; 4th, that all the efforts made to discover it in the blood have been fruitless.

M. Bally next speaks of the effects of morphine on the different organs, and he begins with the mouth and œsophagus. A little bitter taste in the mouth is the only effect which it produces on these parts. It occasions no thirst, redness of the tongue or gums, or swelling of the tonsils. When given in moderate doses, morphine produces no loss of appetite or any other disorder of the digestive functions; wherein it differs greatly in its effects from belladonna. In most constitutions, however, it produces vomiting, if administered in full doses. This property it appears to possess in a very high degree, which is a great obstacle to its being used as a medicine. To avoid this effect, the dose at first should be very small, and should be very gradually and cautiously increased.

The principal effect produced by morphine on the intestinal tube is constipation, hence it may be advantageously administered in cases of diarrhœa. But M. Bally has known several instances where, after producing a constipated state of the bowels at first, a continuance of the medicine has brought on an abundant discharge of fecal matter. It sometimes produces colic pains about the region of the navel, but these are generally of short duration; and they cease of themselves, even when the medicine is continued, if the dose be not regularly increased. The author has some reason to consider the medicine as a vermifuge also, and he relates cases where, under its use, worms have been discharged by vomiting. It is not improbable, however, that, if any other emetic substance had been

administered in these cases, the same effect would have resulted. He has examined the intestinal canal in some instances in which morphine had been taken, but he could never discover any particular effects produced by it on the mucous membrane, probably owing to the smallness of the doses.

With respect to the urinary organs, the action of morphine is very decided on the bladder. In almost every instance it produces a difficulty of passing the urine, and this amounts sometimes to a complete retention; but the dysuria generally ceases as soon as the medicine is omitted. This property of morphine, however, only manifests itself in men: M. Bally remarks that the remedy never produces the least difficulty of passing the urine in females. This is an extraordinary physiological fact. Can it be accounted for by the circumstance of the mechanical construction of the urethra being different in the two sexes? or is it attributable to a difference in the vital functions of some of the organs? Morphine produces no sensible effects on the kidneys. The secretion of urine neither increases nor diminishes under its use; nor does the quality of the fluid become sensibly changed.

M. Bally states in positive terms that the vascular system is by no means excited by the exhibition of morphine in moderate doses. He thinks that the reason which has induced some physicians to consider the remedy as an excitant has been from observing its effects where very large doses had been administered, and where the functions of the circulating system were disturbed in common with those of all the other organs. The author relates several cases in support of his opinion respecting this point; and in conclusion he states, that if the remedy have any effect at all on the heart and arteries, it is a sedative, not an exciting, effect.

In the next place we are informed, that morphine has no tendency to produce hemorrhoids, that it has no emmenagogue properties, that it will not provoke nasal hemorrhages, nor produce hemoptysis, that it will not allay cough in a satisfactory manner, that it is not diaphoretic, that it has no influence in the production of heat, that it will not oppress respiration, that it produces no flushing of the face or symptoms of asphyxia.

The exhibition of morphine gives rise, in very many instances, to an intolerable itching of the skin. The irritation in some cases, extends all over the surface, in others it is partial, confined more particularly to the nostrils, neck, loins, and the genital organs. The itching is not uncommonly accompanied by a cutaneous eruption.

The brain and nervous system are the parts upon which morphine exerts its influence most particularly. A man, aged sixty, of a plethoric constitution, was seized, in 1809, with apoplexy, followed by hemiplegia of the left side. In about two months the power of motion began to return; but the arm continued to waste, and it became contracted at

the elbow joint. In 1821 the power of motion began to diminish again, and the patient, continuing to get worse, entered the hospital in May, 1823. At this time his intellect was perfect, with the exception of a certain degree of tardiness in his mental operations. He spoke little, pronounced his words badly, and he was always disposed to lie on his left side. After a few bleedings, which produced no sensible effect, he was ordered the warm bath whilst ice was applied to the head. He had also a fourth of a grain of acetate of morphine morning and evening prescribed him. He had taken only seven doses of this medicine when there came on loss of sleep, cephalalgia, delirium, an attempt to jump out of bed, and other symptoms of cerebral excitement. The medicine was omitted, and recourse was immediately had to bleeding. By the next day all the new symptoms had disappeared, and the patient was much in the same state as before any remedies were applied. M. Bally attributed the untoward symptoms already described to the application of the ice to the head, he therefore prescribed the acetate of morphine again, in the same quantity as before. The pulse on the third day became hard, full, and frequent; the tongue dry; agitation and delirium throughout the night. After two bleedings the delirium became furious, and a total extinction of intellect took place the fifth day. Respiration was laborious; the patient lost the power of expectoration; the saliva discharged involuntarily; the face pallid; the eye-lids remained half closed; the eyes turned upwards, and the tongue dry and red. The patient died on the sixth day from the time he began to take the morphine.

The brain was very minutely examined. On raising the skull-cap no blood or serum was observed; there was not the least injection of the meningeal vessels; a considerable quantity of albuminous serum was found between the arachnoid and pia mater, although these membranes were not opaque, nor were their vessels injected. Towards the lateral and middle part of the right hemisphere, one of the convolutions of the brain appeared much depressed; it formed a cavity full of limpid serum. A great quantity of this serum surrounded the end of the medulla oblongata towards the occipital foramen. There was a sanguineous effusion in the posterior part of the left hemisphere, and this appeared recent; this part was in a state of ramollissement; the surrounding parts were in a healthy state. M. Bally exhibits this extravasation to the action of the morphine. The brain presented several other morbid appearances, but not of recent date.

M. Bally is of opinion that the delirium brought on in the above case by the exhibition of the morphine is attributable chiefly to the disease of the brain, as the medicine does not commonly produce this symptom.

Trembling and agitation of the muscular system are symptoms sometimes produced by the remedy if continued for a length of time. It has also the property of occasioning dimness

of sight, which renders it an improper remedy in amaurosis. M. Bally, having never administered morphine in very large doses, cannot speak with positiveness whether or not it have the property of occasioning dilatation of the pupils, but his opinion is, that it has not. A young man took, in a mistake, a pill containing three grains of it; in this case no dilatation of the pupils took place. In cases of poisoning with opium we have witnessed the pupils contracted to the apparent size of pins' heads. The author has noticed similar effects produced by the acetate of morphine. MM. Orfila, Magendie, Dupuy, and Barthelemy state that the pupils invariably dilate in experiments with morphine on animals. Respecting this fact M. Bally observes that the iris of dogs, cats, and horses, has a mobility much greater than that of man.

Morphine appears to possess all the sedative effects of opium, and the action of both on the system is very similar. The former, however, is not liable to produce headach and the other symptoms of excitement which usually follow the exhibition of opium. The stimulating effects of opium have been generally attributed to the narcotine which enters into its composition; but some chemists are of opinion that the latter substance is nearly inert when totally deprived of morphine, and that the stimulating properties which it appears to possess when administered to animals, depend upon some portion of morphine remaining in combination with it. It is scarcely necessary to notice that a combination of these two substances may possess medicinal properties very different from those of either singly. Although pure narcotine may be inert in its effects on the system, still by its combination with morphine its latent properties will be developed, and will modify the therapeutic properties of the latter substance.

Morphine and its salts have not yet found their way into general use amongst medical men. This is rather to be regretted, as their medicinal properties are, so far as observation has hitherto proved, better adapted than those of opium for the purposes for which this is usually administered.

In the production of sleep, and in some other effects, M. Bally says that there is no proportion between the therapeutic properties of opium and its extracts, and those of morphine. Fifteen grains of crude opium contain, on an average, one grain of morphine. According to this proportion, it might be expected that a given quantity of morphine would have fifteen times the effect on the system that the same quantity of opium would produce. This is, however, by no means the case. M. Bally observes that it may be admitted, as very probable, that a grain of the aqueous extract produces greater drowsiness, than a quarter of a grain of its salifiable base. This is a circumstance well worthy of attention.

In summing up his observations on the action of morphine, M. Bally divides its effects into the direct and the indirect. The former

are nausea, vomiting, gastralgia, eructations, constipation, and intestinal pains; the latter are ischuria, itching, and all the cerebral symptoms. It is to be observed, however, that most of these symptoms occur only when the remedy is administered in large or frequent doses. There is one very important advantage likely to result from the employment of the active principles of vegetable substances as therapeutic agents, namely, that they may be introduced into the system through the medium of the skin, in sufficient quantities to affect the constitution. Independently of the difficulty with which we sometimes meet of persuading individuals, particularly children, to take medicines, the stomach is often so irritable as to reject every thing in the form, or under the name of medicine. M. Bally says that he has met with great success in administering the active principles of some remedies in this way, which he calls the *sub-epidermic* method. It consists in removing the epidermis by means of vesicatories and in applying the active substances to the surface of the true skin. Of two persons affected with *chiroplegia*, or paralysis of the hands, the one was cured by the action of a grain and a half of strychnine, administered according to this method daily; the other had recovered the use of one hand entirely, and very nearly the entire use of the other when M. Bally wrote his memoir. Morphine, in particular, produces wonderful effects in rheumatism, lumbar neuralgia, and sciatica, when employed according to the sub-epidermic method. It always gives ease as soon as it is brought in contact with the skin; and patients complain of great torments when its employment is discontinued for any time.

From the Edinburgh Medical and Surgical Journal.

TRAITE DES MALADIES DU CERVEAU ET DE SES MEMBRANES, &c. *Treatise on the Diseases of the Brain and its Membranes.* By A. L. J. BAYLE, M.D. &c. &c. Mental Diseases. Paris, 1826.

DE LA PARALYSIE CONSIDEREE CHEZ LES ALIENES, &c. *Of Palsy in the Insane, from researches made in the service of the late M. Royer-Collard and M. Esquirol.* By L. F. CALMEIL, M.D. &c. &c. Paris, 1826.

It has been very generally imagined that mental derangement might take place without any morbid state of the brain demonstrable by inspection; and some have even gone so far as to assert that it consists in a morbid train of ideas only, totally unconnected with the material condition of the brain or its membranes. In favour of these opinions, the principal arguments are of the following nature:—*First*, it is said persons after remaining some time insane have completely and often permanently recovered the use of their reason; *Secondly*, in persons who have died insane it is impossible in all instances, to find, either in the brain

or its membranes, traces of morbid change adequate to account for the perversion of ideas and judgment; and, *thirdly*, though in others who have died insane, and in whose brains various marks of diseased structure were found by Morgagni, Meckel, and Greding, the same changes have been found in the brains of others who retained the perfect use of their faculties to the last. Dr. Ferriar especially may be mentioned as one who has collected a considerable number of facts illustrative of this conclusion.

Though to various authorities these arguments have appeared of variable force, yet the persuasion in favour of the opinion, that insanity is independent of the morbid state of the brain, has been very general. In proof of the truth of this proposition, it is unnecessary to go further than some of the most popular treatises on mental derangement, in which, from Arnold, Crichton, Perfect, Pinel, and Haslam, to Esquirol, O'Halloran, and Burrows, the main object of inquiry is not so much to ascertain the pathological nature of the disorder, as to trace its origin to certain remote causes, physical and moral, and to determine the proportion of cases which originate from each. Without any wish to undervalue this species of inquiry, it may be said, that, though the knowledge of remote causes is of great moment in the treatment of diseases, it is not only incomplete, but may be exceedingly injurious, unless the physician endeavours to trace the manner in which they tend to derange the functions of the animal body, or of any of its organs. Haslam, indeed, though he gives the remote causes due attention, and speaks with sufficient scepticism of the inquiry into the proximate, expresses a decided opinion that insanity is not a *disease of ideas*, and is among the first who, in modern times, has ventured to regard it as connected with disease of the brain or its membranes.* Dr. Marshall had previously expressed the conviction, that insanity always depends on diseases of the brain; and has left in his posthumous work some of the proofs in which this conviction was founded.†

It is not improbable that some of the misconception on this head may depend on inaccurate notions of the sound structure of the organ, and of the degree and nature of the deviation requisite to constitute insanity. It is not by demonstrating what is called organic lesions, that is, *distinct and obvious changes of structure*, that the pathologist is in all instances to explain a permanent state of mental aberration. A much smaller and less obvious degree of change may, under certain circumstances, be quite competent to produce effect. It is justly remarked by Cullen, that

* Observations on Madness and Melancholy, &c. by John Haslam; Chap. v. near the conclusion, p. 238, &c.

† The Morbid Anatomy of the Brain in Mania and Hydrophobia, &c. &c. collected from the papers of the late Andrew Marshall, M.D.

the absence of organic lesion in the instances of insane persons does not assure us that no change had taken place in the brain. (1554.) Changes in the state of the capillary system either of the cerebral membranes or of the organ itself, it may be easily shown, give rise to very considerable effects on the faculties of thought and intellect. It is an indisputable fact that in fever, in the meningeal inflammation which terminates in hydrocephalic effusion, and in that which succeeds blows and injuries of the head, the state of the meningeal or encephalo-meningeal vessels is adequate in all cases to produce more or less confusion of thought and judgment, and occasionally complete, though temporary, aberration. In the investigation of the theory of mental disorders, it is probable that too marked a distinction has been attempted to be traced between the delirium of these acute disorders and that which occurs in insanity. The difference, nevertheless, between the two forms of deranged intellect, one of which is accompanied with a general affection of the heart and circulating system, the other without, cannot be a difference in kind. In meningeal inflammation, whether dependent on fever or injury, the affection of the circulating system at large is, so far as the general principles of morbid action demonstrate, the concomitant or the effect of local disorder. We know, however, that local disorders may exist in certain circumstances without giving rise to that general commotion and conspicuous abnormal action of the sanguiferous system; and it is a proper subject of consideration to inquire, whether in the insane, a degree of change in the capillary system of the brain and its membranes, not merely analogous, but quite similar to that which takes place in meningeal inflammation, may not occur independent of any marked disorder in the circulating system sufficient to constitute fever.

The appearance of the works of M. Bayle and M. Calmeil, with various papers which have lately issued from the pen of the younger Pinel, induces us to give the subject some passing attention. Whatever difficulty M. Pinel the elder may have had, in common with many other eminent physicians, in tracing the several forms of mental derangement to some material or sensible change in the brain or its membranes, this difficulty appears to have diminished greatly in the hands of his son and some subsequent inquirers. The impression appears now to be becoming general among many of those who have studied the phenomena and pathological peculiarities of mental diseases, that though a disordered train of ideas and associations is a prominent feature, this depends invariably on some morbid state either of the meningeal or of the cerebral vessels. It is not improbable that the apparent weakness or defects of this theory, which, upon the whole, is the most rational, and it may be added, the most useful in its practical influence, are to be traced chiefly to deficient or erroneous observation; and while it must be acknowledged to be unphilosophical to draw

general conclusions from a few isolated facts, it is not less irrational to establish general principles while the individual facts are imperfectly observed, equivocal or contradictory. Though in the early stage of an inquiry the facts may be too few, too partial, or too uncertain to justify any general inference, in proportion as by the united efforts of many they become numerous, important, and accurate, they at length form evidence, which, if not irresistible, is at least so strong as of themselves to afford the true explanation of their previous discordance, and of the principles on which they may be eventually generalized. It is chiefly on this ground that we propose at present to take a view of the facts and circumstances which tend to confirm the general inference, that whatever be the form of deranged intellect, under whatever circumstances it takes place, and whatever agents, physical or moral, appear to operate as its exciting causes, its phenomena depend in all cases on a morbid state of the capillary system, either of the brain or of its membranes.

Omitting for the present the researches of Littre, Morgagni, and Meckel, which were directed chiefly to morbid states of the brain as the pathological causes of insanity, the observer finds in the elaborate descriptions of Greding the first distinct traces of full and comprehensive views of the state not only of the general contents of the cranium, but of that osseous case itself, in the persons of the maniacal and epileptico-maniacal insane. According to the researches of this accurate observer, the *pia mater* and arachnoid membrane appear almost never to have been in a state of soundness in the persons of those who laboured under symptoms of insanity. Though in a few (five) the *pia mater* is stated to have been wonderfully pale, in a greater number (nine) it was reddish and inflamed; and in a number still greater (thirty-five) its vessels were remarkably loaded with dark-coloured blood, either generally or to a greater or less extent of its surface. These appearances, however, are not free from ambiguity; since much depends on the manner in which death takes place, and on the circumstances in which the individual is placed during the last moments of existence, as to what may be the exact degree of distention of the vessels, great and small, in any tissue.

A much less equivocal trace of morbid action Greding found in the aspect of the *pia mater*, the external surface of which was very frequently white, thick, and mucous, sometimes dry and lardaceous, like the buffy coat of inflamed blood; while it was generally covered with minute hemispherical bodies, sometimes soft and spongy, sometimes hard, of the size of a mustard-seed, a grain of hemp, or a small pea. In twenty-nine cases did the *pia mater* present this white, thick, mucous appearance near the vertex, and along the longitudinal sinus. In twenty-nine it was altered in the same manner, but to a much greater extent over the membrane. In nine only, however, was it observed over the whole con-

vex surface of the organ, and the plane surface of the commutual region of the hemispheres; and in a still smaller number (six) was it found to extend round the *cerebellum* and *medulla oblongata*. This white, thick, and mucous aspect depended doubtless, as Greding represents, partly on serous fluid effused into the delicate cellular tissue, between the arachnoid, *pia mater*, and membrane. But in other instances, when the latter was dry, opaque, and lardaceous, he appears to regard it as an albuminous exudation, the result of the inflammatory process.

The minute pisiform or lenticular eminences, which he takes particular pains to distinguish from the *glandules* of Pacchioni, both in situation and in their softer consistence and milky colour, he found in thirty-seven cases disseminated *passim* over the membrane; in twenty-seven cases more copiously and thickly crowded; and in fourteen cases accumulated most abundantly together. These bodies appear to be a product of the inflammatory process; for we have since seen them in circumstances in which the traces of chronic inflammation were distinct and unequivocal. Another appearance of the same nature, recognised by Greding in the cerebral membranes of the insane, was the occasional elevation of the arachnoid from the *pia mater* into minute bladders or sacs by serous fluid effused into the subarachnoid tissue. The subsequent observation of the same phenomena by Haslam and Marshall can leave little doubt of the fact; while its nature is established by its connexion with blood-coloured serum, injection of vessels, or actual extravasation of blood, as observed by Greding himself. The total number of cases examined by this physician was 120.*

Similar changes in the cerebral membranes were recognised by Joseph Wenzel of Mayence,† and Chiarugi of Florence. The latter especially, among fifty-nine necroscopic inspections of insane persons, found in fifty-four more or less thickening of the membranes, serous infiltration of the subarachnoid tissue, with or without injection of the capillaries, and serous fluid to greater or less amount in the ventricles.‡ It shall be afterwards shown that these appearances are the result of vascular congestion or injection.

At a later period much the same results may be seen in the necroscopic reports of Haslam and Marshall. Of thirty-seven cases of

* *Melancholico-Maniacorum et Epileptico-rum quorundam in Ptochotropheo Waldheimensi demortuorum sectiones tradit J. E. Greding, Cont. 2da Apud Ludwig Adversaria, Vol. ii. P. iii. p. 449.*

† *Observations sur le Cervelet et sur les diverses parties des cerveau dans les Epileptiques, par Joseph Wenzel, D. M. &c. &c. Traduit par M. Breton. A Paris, 1811.*

‡ *Della Pazzia, in genere e in specie con una centuria d'osservazioni. 3 vols. 8vo. In Firenze, 1794.*

insane persons examined by the former, whatever was the state of the brain, the membranes were unsound in all except one, (the thirty-third;) and even in this there is said to have been "a considerable determination of blood to the brain;"—a sure indication that the capillaries of the *pia mater* could not have been in a healthy state. In twenty-three of these cases the *pia mater* was injected, loaded with blood, more or less inflamed, or otherwise diseased in its capillary system. In twenty-four cases the arachnoid membrane was opaque, in some instances of a milky opacity, in several thickened, and in one-half at least with infiltration into the subarachnoid cellular tissue. Of these twenty-four, thirteen belong to the first class in presenting also traces of injection or inflammation of the *pia mater*. In twenty-one cases serous fluid, varying in amount from two tea-spoonfuls to four, six, and even eight ounces, was found in the ventricles; and of these also it is to be remarked, that ten corresponded with the first class in presenting traces of meningeal inflammation, more or less intense. It is almost unnecessary to say, that the presence of this fluid in the cerebral cavities indicated previous congestion or inflammation of the choroid plexus; and though the choroid was not in all instances much or evidently affected, yet, as in several, it was vascular, thickened, vesicular, or indurated, the appearance of fluid in the cavities was as unequivocal a mark of its having been unsound, as if it had been reddened, injected, or penetrated by extravasated blood. The opacity either in spots or diffusely of the arachnoid membrane, Dr. Haslam justly regards as marks of inflammation; and the subarachnoid infiltration is doubtless to be viewed in the same light. In several of the cases the injection of the *pia mater* appears to have gone so far as to produce extravasated patches; (5, 7, 8, 14, 15, 18:) in one case in which the patient died hemiplegic, the right lateral ventricle was found distended with dark-clotted blood, which appears to have issued from the choroid plexus; and in one in which the patient fell down and expired in a moment, much blood was extravasated between the cerebral membranes, apparently from the vessels of the *pia mater*.

From these dissections Dr. Haslam expresses the opinion, that it may be inferred that madness is always connected with disease of the brain or its membranes. One objection he admits, that it may be doubtful whether the appearances noticed were the cause or the effect of the disease. However plausible this oft-repeated objection may appear, its force will gradually diminish from some considerations which we shall afterwards adduce.

The cases dissected by Dr. Marshall much about the same time, but published some years after, furnish results not dissimilar. Of twenty-two cases of insane persons, whose brains were inspected by this anatomist, in twenty-one serous fluid, varying in amount from one, two, four to twelve ounces, was found in the cerebral cavities; and in seven-

teen of these twenty-one cases similar effusion was found in the sub-arachnoid membrane into minute vesicles or cysts, (6, 8, 9, 18, 22.) Though the *pia mater* is said to have been injected in four cases only, and the arachnoid to have been opaque in two, it is manifest from the fluid effused into the ventricles, or between the membranes, from the vascularity of the substance of the brain, and from the facility with which the *pia mater* was detached from the convoluted surface, that the capillaries of the latter membrane were by no means in a sound state. It is further not unworthy of remark, that in nine of these cases the arteries of the brain were opaque, thickened, steatomatous or ossified,—a condition highly favourable for deranging the capillary circulation of the membranes, or the extosed organ.

These necroscopic reports are important, it must be admitted, in describing the most usual anormal appearances found in the cerebral membranes in the maniacal. By themselves, however, they are of greatly less moment than when taken in conjunction with the results obtained by other observers. It is chiefly when viewed in connexion with the researches of M. Bayle and Calmeil, that they acquire in the eyes of the pathologist that importance which justifies their reception as uniform facts, and the source of correct general principles.

The former author does not scruple to regard the disease to which he gives the name of *chronic meningitis* as the most fruitful, the most constant, and the most frequent pathological cause of mental derangement. In order to comprehend distinctly what he understands by *chronic meningitis*, it is necessary to explain that it does not designate that form of disease which may succeed the acute meningeal inflammation,—a termination which M. Bayle, in common with Montfaucon and Parent and Martinet, regards as highly problematical; but a disease totally distinct from acute arachnitis, and essentially and primarily chronic or slow in progress and duration, and seated chiefly in the minute capillaries of the *pia mater*, as they pass into the convoluted surface of the brain. We shall advert first to the anatomical characters of this disorder, as the most important and interesting point in the inquiry.

The description of the anatomical configuration, arrangement, and distribution of the *pia mater* and arachnoid given by M. Bayle, it is superfluous to repeat. It is enough to say, that it is quite the same as that which has been more than once given in the pages of this Journal, and which consists mainly in regarding the choroid plexus as an internal *pia mater* pertaining to the central surface of the organ, and receiving, like the external, its proper arachnoid membrane. The intimate connexion of the vascular-filamentous surface of this membrane with the convoluted surface of the brain, if clearly understood, cannot fail to show the anatomical physician the facility with which any derangement in its capillary system must affect the brain, and thereby in,

fluence in a very direct manner, and to a great extent, its appropriate functions.

One of the most constant anatomical characters of this chronic meningeal inflammation is injection more or less intense, and to a greater or less extent of the cellulo-vascular web of the *pia mater*. The vessels of this membrane are loaded with blood; the smallest when broken allow it to escape in abundance, and the largest are so much distended along the anfractuosités as to resemble small tense cords. The membrane itself is occasionally of a bright red or scarlet, and is so congested that blood trickles from all points on its removal, and appears to be infiltrated into its tissue. Occasionally the serous fluid lodged in its interstices may give it a pale grayish colour, disguising the redness which it would otherwise present; but its thickness and volume, which are always considerable, and the dilatation of its vessels, demonstrate that it is much injected. The serous infiltration, nevertheless, M. Bayle remarks, may be so great as to diminish or partly dissipate the vascular injection. It ought not to be forgotten that it becomes then an indication or effect of the previous injection. The arachnoid so rarely partakes in this anormal condition, that in the experience of the author it presented a reddish tint scarcely once in sixteen or twenty cases,—a circumstance which he ascribes to the disease proving fatal when most of the symptoms of inflammatory irritation have subsided.

The consequences of this injection, however, may be recognised in a large proportion of cases in the form of thickening and opacity of the arachnoid membrane both of the convoluted and of the central surface. Notwithstanding the extreme tenuity of this membrane in the sound and natural state, it may acquire, according to M. Bayle, under the influence of disease, a thickness equal to that of the *pleura*, the *pericardium*, the *dura mater*, or even of the gastric tissues, when it resembles parchment softened in water. This thickness varies in different regions of the membrane. Most considerable toward the convex centre of the hemispheres, upon their inner surface, and near the great fissure, it diminishes gradually near the base of the brain, and disappears on the lobulated region of the organ. In the arachnoid of the choroid plexus the same change takes place though to a smaller extent. But when it is remembered that this membrane is thinner than that of the convoluted surface, the morbid thickening may be equally great in proportion.

This thickening of the arachnoid, M. Bayle declines to ascribe to the deposition of false membrane on its surface, for the following reasons:—1st. He has never succeeded in splitting the cerebral arachnoid into plates, or detaching the alleged false membrane; 2d, he finds invariably false membrane upon the inner surface of the *dura mater*, and never on the outer surface of the cerebral arachnoid; and, 3d, the surface of the latter always retains its natural smooth and glistening aspect,

which could not be the case if it were covered by an albuminous exudation.

With thickening the arachnoid is always more or less opaque, either continuously or in patches, which are whitish, or grayish, or of a milky aspect. The membranes are said at the same time to become denser and firmer, and to withstand laceration more powerfully. The correspondence between these changes and those remarked by Greding, but especially by Haslam and Marshall, must be so obvious as to require merely to be mentioned in order to be recognised.

One of the most usual effects of meningeal injection, though not very intense, is to induce serous infiltration either from the free surface of the arachnoid membrane, into the fine cellular tissue between that and the *pia mater*, or from the arachnoid of the choroid plexus, constituting effusion into the ventricles. In the first case it is found, as was observed in several instances by Haslam and Marshall, in the cavity of the arachnoid, that is, between the *dura mater* and *pia mater*. Most generally it trickles down as it is secreted to the base of the brain, and sometimes into the vertebral cavity, so that it appears in the form of a gush of water when the brain is removed. Its quantity varies; but in the base of the brain it is stated by M. Bayle to amount to 4, 6, 8, or more ounces. Effusion in the second situation, the sub-arachnoid cellular tissue, is scarcely wanting in a single case. It varies in quantity; and the circumstances of its effusion render the appreciation difficult. It is generally most copious at the upper convex part of the convoluted surface, at the margins of the convolutions, and along the *sulci*. It always gives the arachnoid membrane the aspect of being raised by a gelatinous effusion; and when very abundant it elevates this membrane into cysts, vesicles, or bladders. This fluid is evidently discharged from the minute capillaries of the *pia mater*; and its infiltration into the meningeal cellular tissue constitutes a species of œdema. In the third situation effusion of serous fluid is also very common; and though its quantity may vary, and sometimes by incipient dissection may be totally overlooked, it is never totally wanting. If from mismanagement none be found in the ventricles, the enlargement of these cavities is a sufficient proof that they contained fluid which had been forced through the third and fourth ventricles out of its original situation. In about one-third of the cases of M. Bayle its quantity was so considerable as to constitute a chronic hydrocephalus.

Adhesions of the two folds of the arachnoid membrane are so rare that M. Bayle found them scarcely eight or ten times in one hundred instances. These adhesions are seen most commonly in the great fissure. Only once or twice were they seen in the ventricles. In one case in which the disease was complicated, M. Bayle found the two folds of the arachnoid membrane intimately united by the interposition of an albuminous or lymph patch.

Anormal adhesion of the membranes to the

brain, though not a uniform character, forms a frequent complication in consequence of superficial inflammation of the convoluted surface. It is found in at least one-half of the cases, and is known by portions of the convoluted surface coming off with the *pia mater*, to the vascular surface of which they adhere inseparably. These portions vary in extent from the size of a pin-head, a lentile, or a bean, to that of a five-franc piece, or even more. They are generally found on the convex surface of one or both hemispheres, and in a few cases only at the base of the organ. The membranes are always much thickened, and uncommonly vascular at the point of attachment.

The portions of brain subjacent to the injected or inflamed membranes are always more or less changed from their natural condition. The extent of this change varies nevertheless according to the degree of serous infiltration and of bloody injection, and according to the presence or absence of adhesions.

1st. When the *pia mater* is much injected the surface of the brain is either rose-coloured or distinctly red. Cut into slices, it is always distinctly injected, especially in the gray convoluted matter, which is also softer than in the case of cerebral inflammation.

2d. When the *pia mater* is much infiltrated, and its injection is disguised by this circumstance, the subjacent gray matter appears softer than usual, but in other respects not much changed. Its colour, instead of being rosy, is generally less gray, and is often pale; yet even in this case it may be a little injected.

3d. When the membranes adhere to the convolutions, independently of the portion of gray matter which adheres to the inner vascular surface, and which is unequivocally softened, the spot of the cerebral surface from which this is detached, and which takes the shape of a superficial ulcer, is always much softened, occasionally diffuent,—sometimes without sensible change of colour,—sometimes with injection or rose-colour, much more manifest than in other situations of the gray matter.

Under the head of *granulations* of the free surfaces of the arachnoid membrane, M. Bayle describes the same spherical or spheroidal pisiform eminences which Greding had previously noticed in the cerebral membranes of the maniacal. The present author considers them as analogous to the granular or tubercular productions found at the free surface of serous membranes in certain cases of chronic inflammation. In the outer or convoluted arachnoid they were found in not more than one-tenth of the subjects, near the middle of the convexity of the hemispheres, of small size, and perceptible only by strong light. In the cerebral arachnoid he states them to be present in almost all cases. It is manifest, however, that M. Bayle confounds with these bodies a granular state of the gray and white *epithelion* of the optic eminences and striated bodies. Correct observation, we are satisfied, does not justify the inference that this

smooth surface is covered with a fold of arachnoid membrane, which is confined solely to the *plexus choroides*; and the polished uniform appearance is derived from a firm condensed species of cerebral matter, which Reil not inaptly styles *leather-like* or coriaceous, and which, under certain circumstances, is liable to peculiar induration and granular growth. It gives the surface of these bodies an appearance like coarse sand-paper.

Albuminous exudations and false membrane are another effect of the inflammatory process. In the cases of M. Bayle they occurred in one-sixth of the subjects, at the inner surface of the *dura mater*, the whole extent of which they occasionally covered. In other instances they were confined to the convexity of one or both hemispheres, to the falx, or to the occipital region. But they were in no instance found at the base of the cranium only. Their external surface is attached to the arachnoid membrane of the *dura mater* with variable degrees of firmness. Their internal surface is applied, without adhesion, however, to the cerebral arachnoid. When thin they are transparent; when thicker they are whitish, grayish, or yellowish. The red, brown, or black tints remarked by the author must have been the result either of recent formation while they are still vascular, or of transudation. This is proved by the fact afterwards noticed, that in the attached surface it is often possible to trace blood-vessels, and that the black or brown patches are evidently former clots of blood partly absorbed.

Bloody extravasation in the arachnoid cavity,—an indication of hemorrhagic injection and hemorrhage from the arachnoid membrane,—M. Bayle found in about one-eighth of the cases of persons cut off by chronic meningitis. In one hundred inspections they were found only five or six times, occupying more or less extent of the arachnoid of the convoluted surface, consisting of fluid or coagulated blood, varying in amount from one-fourth of an ounce to one, or one ounce and a half. One case only (45) is given by M. Calmeil, in which much blood, fluid and coagulated, was found in the right side all down to the base of the brain. That these hemorrhages are, like those of serous membranes in general, the result of exhalation, is to be inferred from the fact particularly noticed by the author, that no trace either of rupture or erosion could be remarked on the free surface of the membrane. M. Calmeil gives two cases in which the blood was contained in a cyst formed from the arachnoid membrane. This is a species of *hæmetoma meningium*.

In the case of patches of albuminous exudation, bloody extravasation is occasionally found at their attached surface in the form of reddish, blackish, or brown clots, varying in extent and consistence.

Of the several lesions now enumerated, some are constant, others only variable in their presence. To the former class belong opacity, grayish, whitish, or lactescent colour, and thickening of the arachnoid membrane, infil-

tration of the subarachnoid tissue, injection of the vessels of the *pia mater*, and more or less serous effusion into the cerebral cavities. To the latter are referred great distention of the ventricles, adhesion of the membranes to the convoluted surface, albuminous exudation, injection of the arachnoid, of the *dura mater*, and bloody extravasation.

Meningeal inflammation, farther, may be complicated with sundry morbid changes in the brain itself. Thus in seven cases various regions of the cerebral substance had undergone pulpy destruction. In one case in the centre of the hemispheres was a fibrous tumour as large as an egg, which compressed the brain all round, and in the environs of which the cerebral matter had become softened and diffuent. Another complication met with by the present author consists in acute *arachnitis*, with suppuration of the base of the brain. In like manner Greding met with pulpy softening (*apostema sui generis*) in the upper part of the right *corpus striatum*, (case 49;) laceration from blood effused in two instances, and various degrees of lesion of the *thalami* and *corpora striata*; and Dr. Haslam, in his 34th case, met with gangrene of the middle lobe of the brain, with much fetid purulent matter. Examples of this description it is easy to distinguish from the more simple affection of the cerebral envelopes.

Notwithstanding the foregoing sketch of anomalous changes observed or alleged to be observed in the cerebral membranes of the insane, on various points the candid inquirer will deliberate before he is ready to grant assent to all the propositions and principles advanced in the volume now under consideration.

The first and most obvious point for inquiry is, whether the morbid changes already enumerated are the genuine causes of mental derangement,—whether they are constant in their presence and influence,—and if they be, by what means are we to explain the circumstance of their having so long escaped the observation of inquirers?

The first point can best be answered by reference to the cases of M. Bayle, all of which, doubtless, present various degrees of mental derangement. The author himself undertakes to distinguish these external effects into three stages, one of *monomania*, a second of *mania*, and a third of fatuity (*dementia*.) It is justly remarked, however, by M. Calmeil, that there is nothing fixed in this respect for all subjects. It is indeed well known that both monomania and mania terminate sooner or later in fatuity, unless the individual be cut off by some acute form of the disease, or some accidental cerebral disorder with which it is complicated. But it is by no means equally certain that monomania proceeds to mania, nor that the latter must be preceded by the former.

Be this as it may, however, in a large proportion of cases chronic meningitis gives rise to monomaniacal derangement, in which aspiring and haughty ideas perform a conspicuous part. The direction which the ambitious train of thought takes depends much upon the

ordinary pursuits and professional duties. A merchant or trader fancies himself all at once possessed of the most boundless wealth, though surrounded by poverty and misfortune. An artisan fancies himself the most dexterous and ingenious of his craft. Others, who deviate from this tract, imagine themselves dignified by exalted titles and honours; that they are colonels, generals, barons, princes, or even emperors; and others, in whom it takes a different direction still, arrogate the possession of the most extraordinary natural talents, and the highest attainments in the literary and scientific professions.

In those insane on all points, or the maniacal, the character of the derangement is universal confusion of thought and reasoning. The most extravagant conceptions, the most absurd and chimerical proposals, mixed with ambitious and haughty ideas and aspirations, dogged obstinacy on certain points, and paroxysms of fury and vociferation on others, constitute the usual subjects of thought, if thought it can be called, and expression.

The third period, or rather the concluding period of both forms of insanity, is always distinguished by gradual weakening of the intellectual faculties, till they are completely obliterated. The circumstance, however, most generally characteristic of the supervention of this form of insanity, is palsy of some order of the voluntary muscles, proceeding successively to effect the greater part, till it terminates in general palsy and death. As this adjunct is one of great moment, both in relation to the pathological causes of the disorder and its probable termination, it merits more attention than it has hitherto received from those devoted to the study of mental disorders. To this, therefore, we shall afterwards return.

Admitting, therefore, what the researches of M. Bayle seem to establish, that the chronic meningeal inflammation described above is really connected with mental derangement, it remains to be inquired, whether it be a constant and invariable cause of the latter disorder, or whether derangement can exist without this or some analogous change in the cerebral organization. The determination of the former part of this question has been already in some measure anticipated by the observations made on the researches of Greding, Chiarugi, Haslam, and Marshall. So far as observation can determine a question by the collection of a number of facts tending to the same general results, it may be inferred, that in a large proportion of cases of mental derangement, the capillary circulation of the membranes is much, sometimes very remarkably disordered. Even in those instances in which the cerebral substance is affected, it appears to depend on previous meningeal disease, the morbid process of the filamentous-vascular system of the *pia mater* passing directly and easily to the gray matter of the convoluted surface, and occasionally to the white-gray matter of the central parts. When indeed it is remembered that the membranous envelope of the convoluted surface, and the vascular web of the central

surface are simultaneously disordered, it is easy to see that the intermediate cerebral substance cannot be free from disease.

But if meningeal inflammation, when chronic, gives rise to confusion of thought and derangement of intellect, it may justly be inquired whether it does so when acute, and when taking place under ordinary circumstances. To determine this point it is requisite to ascertain in what states or diseases the circulation of the cerebral membranes is disordered. In continued fever, and in that form of ague which is attended with symptoms of disorder of the head (*tertiana phrenitica*, *siriasis Ægyptiaca*, *tertiana carotica*, &c.) the vessels of the *pia mater* are inordinately, sometimes very much overloaded. In the cerebral disorder which terminates in water of the brain (*hydrancephalus*,) they are also inordinately loaded and injected; and in both of these disorders we know that memory is impaired, thought is confused, and judgment more or less subverted. In the latter case, indeed, the point can only be determined in the case of adults, or at least of persons above childhood; and in more than one case of *hydrancephalus* occurring in persons of this description we may assert, from personal experience, that not only are the external senses disordered, but the recollection is indistinct, thought is confused, and the train of ideas is incongruous.

A proof still less equivocal may be derived from a variety of meningeal inflammation already alluded to in the course of these remarks,—that succeeding to violence inflicted on the head, (*phrenitis traumatica*.) From the cases given in the writings of Pott, Dease, Hill, and especially of Schmucker, and other army surgeons, no doubt can be entertained of the influence of this injury in producing inflammation of the cerebral membranes,—injection of the *pia mater* and choroid plexus,—and its legitimate products, serous infiltration and effusion of serous fluid into the ventricles. During the continuance of this state there can be no question that the intellectual faculties are much deranged, and that the derangement is intimately connected with the meningeal or meningo-encephalic disorder. It can be of little moment in this case to argue that the one disease is attended with febrile commotion in the sanguiferous system, while the other is without. The two conditions of the system agree in the essential circumstance, that the anatomical state of the cerebral membranes is the same.

The circumstance now mentioned is further important in affording the best explanation of the influence of certain exciting causes in the production of insanity. It has been long observed that insolation, the *coup de soleil* of hot climates, and injuries of the head, if not soon or immediately fatal, often terminate in some form of mental derangement. Of the general truth of the fact that *coup de soleil*, when not fatal, is followed by mental derangement more or less complete, and more or less lasting, no doubt can be entertained; for cases of this description are daily falling under the observation of the practitioner; and for the influence of in-

jury of the head most of our institutions for the reception of the insane, and military and naval hospitals in general, but especially that of Chatham in particular, furnish most abundant and decisive testimony. Though in ordinary medical language these are stated as causes of insanity, this vague and confused mode of expression is employed only in accordance with the superficial observation with which cause and effect are often connected in medical reasoning. They are causes of meningeal and meningo-encephalic inflammation, which is the pathological state giving rise to the deranged intellect. These causes, it is well known, are adequate to induce a change always in the organization of the cerebral membranes, sometimes in the brain itself; and in proportion as this change is trifling or considerable, the derangement is also variable in degree. If it subside spontaneously, or is controlled by judicious measures, the derangement also recedes; but if the morbid process of the membranes is either aggravated or remains the same, the maniacal or monomaniacal state becomes more intense and inveterate, till it eventually terminates in confirmed fatuity.

Similar considerations may be justly applied to other agents referred to the order of exciting causes, and to none more readily than the habitual and temperate use of intoxicating liquors. However the fact is to be explained physiologically, no doubt can be entertained of the influence which these substances possess in inducing accumulation within the vessels of the brain and its membranes. This is demonstrated both by their temporary administration and by their habitual employment,—a frequent effect of which is to induce manifest congestion of the meningeal vessels.*

It must not, nevertheless, be imagined that the traces of this meningeal disorder are always very distinct. The injection alone is essential; the effusion and infiltration, the opacity and thickening of the membranes, which are mere effects, may or may not be present, according to the duration of the disease. In recent cases it may be so slight as to escape notice. In those of more lengthened duration, it may have subsided and given place to its effects. These considerations must be kept in view in the inquiry into the influence of any anomalous state of the meningeal vessels in producing mental derangement.

Upon the question whether derangement could take place with a perfect normal state of the cerebral membranes, it is not difficult to come to a conclusion. Amidst so much positive evidence, one or two, or even several cases, in which they seemed to be sound and in their normal condition, would scarcely be adequate to prove the negative. The reason of this must be obvious to any one familiar with the rules of evidence in medical inquiries. In pathological researches it is by no means an

* See dissections of cases of *delirium tremens* in the writings of Frank, Speranza, Black, and others.

easy task at all times to fix the standard of healthy or normal organization; and the vague language in which necroscopic reports are too often expressed, leaves a wide chasm for many fallacies. What may be healthy in relation to the tissues of one subject may be morbid in reference to those of another; and a very inconsiderable deviation from the healthy standard may produce in different individuals different effects. Even in cases in which no morbid deviation is stated to have been recognised, it is not improbable that this has arisen from the circumstance, that the exact limits of sound and morbid organization were not exactly defined. It is not, as has been formerly hinted, always necessary to look for *change of structure*, or, in other words, for the *products of morbid action*. The morbid process itself, which consists in *change of organization* only, that is, some deviation in the circulating system, is, in all cases, sufficient to induce change of function. To this, therefore, the pathologist must direct all his attention in studying to fix the characters of anormal action. These considerations show how easy it is for slight degrees of change to escape notice, and how necessary it is for physicians in subsequent researches to examine, with the closest scrutiny, the state of the cerebral membranes in those who have lived and died insane.

The subject of remote causes, and more especially the manner in which they are connected with the proximate or pathological cause, constitutes an important but arduous inquiry; and all that can be attempted here shall be confined to a few brief remarks.

Under the head of *sex*, it appears that among 182 patients at Charenton, 158 were men and only twenty-four were females,—a difference which M. Bayle ascribes to the influence of great moral commotions, excess in drinking, wounds of the head, &c. to which the one sex is much more exposed than the other. Though all ages are subject to chronic meningeal inflammation, yet, according to the tables in the present volume, it is most frequent between the ages of 35 and 45, the numbers being greatest between these periods, (one-third of the whole;) less so from 45 to 50, nearly of the same degree of frequency between 30 and 35, and 50 and 60, after which it appears to become much less frequent. From this view M. Bayle infers that insanity is a disease of the tempestuous season of life, when hope is still unbroken, when passions are strong, and when pleasure, luxury, ambition, and avarice, alternately take possession of the heart.

Under the head of *profession*, it is a circumstance deserving attention, that the military life has furnished a large proportion of the residents of Charenton. Among 134 persons who had been trained to the various occupations pursued by the male sex, forty-eight belonged to the military profession, twenty-five had been occupied in offices of the public administration, twenty-five had been engaged in commerce, eighteen in different trades, eight in the fine arts, and only six in offices

connected with the profession of the law. It would have thrown some light on the nature of this disease if as much of the history of each of these cases had been furnished as to show, whether the military life possesses, beyond exposure to accidental injuries and intemperate or irregular habits, any thing capable of favouring the formation of the disorder. It appears that ten cases only were traced directly to the fatigues of the military life, and the same number to blows, falls, or wounds on the head; but it is not said whether the latter occurred among the military or the civil maniacs. A similar defect may be noticed in the head of *excess in drinking*, to which thirty-one cases are ascribed, but without stating whether they occurred in the persons of the military or the civil. A mode rather peculiar of explaining the prevalence of insanity among the former is to ascribe it to the sudden transition from a state of warfare and tumult to that of peace and tranquillity. Though the former is doubtless a condition of fatigue, privation, and penury, and the latter may be, as M. Bayle supposes, one of abundance, yet it is well known that war is equally often the season of indulgence, excess, and irregularity; while peace, if one *d'une nourriture abondante*, is also a season of idleness, inactivity, and ennui, prolific causes of mental aberration. It is unfortunate that the author gives equally few data to trace the connexion between the remote and proximate causes in this case.

Under the head of *pathological predisposing causes*, however, the reader finds more distinct matter for reflection. In eighteen cases the disease supervened on suppressing habitual hemorrhoidal discharge, in two the interruption of a habitual blood-letting, in four the suppression of cutaneous eruptions, in seven cases chronic rheumatism, and in three frequent attacks of gout and erysipelas. In fifteen cases the disease was connected with hypertrophy of the left ventricle, in eight with headach of longer or shorter duration, and in three with nervous attacks. In such circumstances, little doubt can be entertained of the connexion between the apparent exciting cause and the morbid state of the brain or its membranes, or both.

Of moral causes, the most frequent are the gloomy passions, as disappointment, envy, vexation, or disgust. Thus the military adventurer, whose ambitious hopes of riches and elevated rank were dashed by the concluding events of the war, becomes the victim of a deep and settled gloom, which eventually, by fixing on the brain, unhinged his reason. Those engaged in mercantile pursuits suffered from unsuccessful speculations, from failures and the contingent losses. And many, it appears, by losing situations, on which the hopes of their families depended, became dejected and desponding, till, by frequent brooding over their calamities, their faculties became disordered, and their reason impaired.

All these remote causes concur, according to M. Bayle, in producing in the cerebral mem-

branes an irritation, of which the prominent feature is congestion or accumulation of blood in the capillaries; "*une fluxion sanguine vers la tete, dans les vaisseaux du cerveau, mais surtout de la pie-mere.*" This congestion he represents as existing in all cases, and as invariably preceding the attack of chronic inflammation of the meninges, of which it is to be considered, he says, as the proximate or direct cause. In this stage it gave rise to pain or weight of the head, and more or less disorder of the sensations. In one-half nearly of the cases the rapidity and violence of the attack gave rise to a distinct apoplectic fit, varying in duration for a few minutes to several hours; and in the course of a few days or weeks after mental derangement became manifest. In the other half of the cases the approach of the insane symptoms was different. In some instances habitual somnolence, weight of the head, and redness of the face and eyes, were the first symptoms of the congestive stage; in others giddiness, loss of recollection, and transitory confusion of thought, occasionally with indistinct or thick articulation, were its effects; and in others again, stammering or incapacity to articulate certain words, with inability to walk in a straight line, or maintain the equilibrium, were the indications of its commencement.

Of the mode in which the remote causes operate in producing this irritative congestion, M. Bayle nowhere gives any information; and the reader is left to take his authority for it, without being instructed why the remote causes should produce the effect alleged. That some of them, as mechanical violence, habitual intoxication, and *coup de soleil*, should give rise to such disorder of the meningeal capillaries, is not difficult to see. But it is much more difficult to understand how a moral affection should induce this material change in the animal tissues; and of no moral affection is it more difficult to understand this, than of those which are said to give rise to religious monomania. Without wishing to impair the veracity or authenticity of the descriptions of M. Bayle, we are inclined to think that what is believed to be the cause is very often the first overt effect of insanity.

A man, for example, of most sanguine and ambitious hopes, forms some absurd and chimerical design, which no person of sober thought or chastened judgment would indulge for a moment. If he succeeds either partially or generally, he is one of the few who succeed in such undertakings. But if he fail, which is the most likely result, the disappointment of his hopes is so great, that, instead of attempting to repair his error as a well regulated mind would do, he broods over what he conceives to be his misfortune, or he allows himself to be worked into a fit of peevishness and discontent, till he commits some extravagant act which no longer permits his derangement to be questioned. In such a case as this, however, which is by no means uncommon, disappointment is not the cause of insanity. The individual was previously insane,

and committed his first mistake under the monomaniacal delusion; but it was only when he committed the overt act that it attracted notice. The course now mentioned is very much the case with what is termed *religious insanity*. The victims of this variety of *monomania* are in general ignorant and weak to an extreme; incapable of any exercise of their own reason, of which indeed they have but a small share; credulous, and ready to become the prey of any unprincipled person a little more shrewd than themselves. They are, in short, originally persons of weak intellects; and this weakness depends in all probability on original or hereditary conformation. Of such insanity religion cannot be said to be the cause. But the original susceptibility, or what Mr. Hunter would have termed the *disposition* to meningeal disease already existing, leads them to think, and of course to think very erroneously, on a topic in which all are much interested. Reason and judgment, in such circumstances, have no share in the business. Imagination, unrestrained and extravagant, is the sole agent. The longer they think on a subject much too difficult for the small portion of reason which they possess, the more confused they become; and when to this are added the terrors which injudicious advisers too often neglect not to strike into their disordered breasts, the result is not wonderful. In this case, however, insanity also pre-exists, and, in truth, is the cause of the erroneous train of thinking. In such individuals the disposition to the unsound state of the cerebral membranes forms part of the original structure. Passions, emotions, and other moral circumstances, in all such cases, though apparently causes, are really effects; for in a mind originally sound no such inordinate emotions are allowed to exist or operate.

The last subject to which we shall advert in these observations is one of much moment in settling the question regarding the material cause of mental derangement. The combination to a greater or less extent with palsy, a disorder always, so far as is hitherto known, dependent on some material change in the brain or its membranes, cannot fail to afford a strong proof of the material nature of the former disease.

The connexion between palsy and insanity, though rather overlooked by authors, has nevertheless been observed. But the fact of the connexion, though established, has not been properly or diligently applied. "Paralytic affections," says Haslam, "are a much more frequent cause of insanity than has been commonly supposed; and they are also a very common effect of madness. More maniacs die of hemiplegia and apoplexy than from any other disease."* Here is stated a fact of the utmost importance, but so mystified, we regret to say, that its proper application is wholly overlooked. Paralytic affections cannot be said to be a cause of insanity, any more

* Observations on Madness and Melancholy, &c. ch. vi. p. 259. 2d edition. London, 1809.

than insanity can be said to be a cause of palsy. The explanation may be understood from the concluding statement, that "more maniacs die," not so much of "apoplexy and palsy," as of that state of the brain which induces at once mental derangement, loss of power, and finally loss of sensation, than of any other morbid state. By looking solely to the pathological cause of disease, much confusion both of thought and expression is prevented.

In all the institutions for the reception of the insane we find a number, more or less considerable of persons who labour under various disorders of the muscles of voluntary motion. Some speak thick, articulate with difficulty, or actually stammer in attempting to express their thoughts; some totter or stagger as they walk, or require some support; others have involuntary contractions in an arm or leg; others have convulsive or tonic spasms; several are hemiplegic or paraplegic; and not a few, after passing through one or more of these forms of impaired motion, are entirely deprived of the use of their extremities. All these varieties of impaired motion have been collected under the general name of palsy,—an epithet improper certainly, both nosologically and pathologically, but which perhaps it would be inconvenient to reject entirely.

It is not easy to say whether this palsy should be regarded as invariably or only accidentally connected with mental derangement. By M. Bayle, who believes it to be necessarily connected, it is represented as one of the usual symptoms of the last stage of chronic meningeal inflammation,—as the point to which, along with fatuity or *dementia*, mania necessarily tends. M. Calmeil, on the contrary, who denies indeed several of the doctrines of M. Bayle, for whom he seems to have no great respect, says that this representation is quite hypothetical, and states it to be the result of many notes intentionally taken on the subject, that palsy commences sometimes after mental derangement, sometimes at the same period, and that it rarely precedes that disorder.

1st. In some instances mental derangement proceeds to the chronic state, and continues from fifteen to twenty years without the patients betraying the smallest degree of feebleness in their lower extremities, or the slightest embarrassment in speech. The same individuals, nevertheless, may present at a later period all the signs of general palsy. Intelligence appears to be entirely obliterated; speech is unintelligible; progression becomes unsteady; and as these symptoms are aggravated, the moment of death, which previously appeared to be distant, approaches with rapid strides. This statement, though given by M. Calmeil, doubtless corresponds with the view given by M. Bayle. At Charenton, it appears, palsy takes place shortly after mental derangement.

2d. In other instances palsy comes on simultaneously with the mental disorder. It appears that at Charenton there are daily admitted patients who exhibit much disorder of

locomotion, which is not stated in the certificate of the physician to whose care the patient was first committed. Upon examination it often results that the speech was thick, or the motion of the limbs irregular, as soon as the first symptoms of deranged intellect appeared.

3d. Though more difficult to find cases in which paralytic disorder preceded the mental, this nevertheless has been observed. Under the care of M. Esquirol, was a patient struck with general palsy, who for several months retained all the vigour of intelligence, and still continued to perform an important part in business. Eventually, however, he became maniacal.

Palsy in the insane is distinguished by peculiar characters. At first the motions of the tongue are constrained; the efforts to speak are unavailing; articulation is impossible; and the individual struggles and stammers like a person intoxicated to express his desires. As this becomes more intense, he is observed to totter, stagger, or reel in walking, and is aware that he cannot direct the muscles of his limbs to move as he wills them. The derangement at this time is generally verging rapidly to fatuity. At a more advanced period, not only is speech obliterated or converted into inarticulate muttering, but the patient is unable to maintain himself erect, and whenever he wills to make any motion, he finds that neither arms nor legs are obedient to his desires. It impairs, in short, but does not annihilate, the motions of *all* the voluntary muscles. It is a *general* but *incomplete* loss of power.

With the palsy is generally associated more or less affection of the senses, which, however, are not obliterated. The paralytic madman distinguishes light from darkness, he hears a loud sound made at his ears, and he is sensible of pungent odours. But if the skin be touched with two bodies, the one hot and the other cold, he does not distinguish the difference. General sensation and taste are equally obtuse. In this state death is generally not remote. The duration of the affection varies according to the slowness or rapidity of the disorder in the brain, on which the palsy depends. Some paralytic maniacs live eight months, a year, eighteen months, and others even continue two or three years, but rarely more. The average duration of life after the commencement of paralytic symptoms is about thirteen months.

The fatal termination, however, is not always inevitable. M. Calmeil mentions examples of paralytic maniacs, who, after manifesting the usual signs of a disease known to be certainly fatal, have unexpectedly recovered a degree of strength, and been able to walk several hours daily. These alternations depend apparently on the cerebral affection stopping after it reaches a certain point.

The comparative frequency of palsy in the insane is a point of great moment in the determination of the question of the anatomical characters of insanity. The pathologist is naturally led to the question, whether palsy occurs in all the insane as a necessary concomitant or effect of the morbid process, which is

supposed to give rise to mental derangement, or is confined only to a certain description of cases. On these points we find no certain elements in the writings of the present authors. M. Bayle, though he admits that the third stage, or that of fatuity, (*dementia*), is not always the consequence of the second, (*mania*), and may follow immediately the monomaniacal stage, (p. 504,) represents palsy more or less complete to be an invariable adjunct of the stage of *dementia*. According to this author, every case of insanity, that is, every case of chronic meningeal inflammation, if it does not sooner, and in a more acute manner extinguish life, terminates naturally in palsy more or less complete of all the voluntary muscles, and eventually affects those subservient to involuntary motion. The duration of the entire disease then varies from two months to six, eight, ten, or even twelve years; while that of the fatuous paralytic period varies from three, six, or eight months, to that of two or three years; a statement not materially different from that of M. Calmeil.

The latter author, on the other hand, satisfies himself with saying simply, in general terms, that palsies are *very frequent* in the insane. He remarks, however, that, since *general incomplete* palsy is rather rare in females, there ought to be fewer in an equal number of subjects in the wards of the Salpêtrière, inhabited exclusively by women, than of those of Charenton, in which patients of both sexes are confined. In Bicêtre, on the contrary, which is devoted to men only, general palsy, he remarks, ought to be a very frequent disorder; and the total amount of cases ought to be much greater than in the other two establishments. These, however, are conjectural results; and we do not perceive that either author has been at the pains to verify them. We are therefore left somewhat in the dark as to the main point of inquiry, whether insanity with palsy is really a different disease, or merely an advanced stage of the same disease, as insanity without palsy.

In the heads of persons cut off by this disease a great variety of morbid changes are found. In some the cranial bones are affected; in many the membranes are diseased or changed in structure; in not a few the cerebral substance is the seat of various morbid changes; and in some new growths or formations are developed. After an elaborate and careful examination of these changes, of the circumstances with which they are connected, and of their comparative influence, M. Calmeil comes to the conclusion, that, as none of them are constant, none are essential; and that to explain the phenomena of the disease, it is necessary to look for some morbid state, which, as a common point of agreement among all, may be present in all cases, and therefore adequate to explain the phenomena of all. This, he imagines, is found in a chronic inflammatory process, which exercises its principal ravages at the surface of the convolutions, in the gray matter, and in the membranous coverings of the organ. This

chronic inflammation, he conceives, gives rise to palsy, by inducing in the brain a change of organization *identical* or common to the whole of the cases examined necroscopically, and which must have existed independently of the lesions recognised. He justly remarks, that the circumstance of the brain of a person cut off by general palsy presenting no appreciable trace of such inflammation would not be positive proof that it did not exist; since after continuing for some time it might have subsided, leaving a morbid change, which, though not a direct cause of the paralytic disorder, was an effect of the cause from which that resulted.

Although M. Calmeil disclaims all accordance with the principles of M. Bayle, the views now stated as issuing from the former are much less different from the doctrines maintained by the latter than at first sight appears. It is of little moment whether insanity be ascribed to a phlegmasia of the cerebral membranes or of the convoluted surface. The difference is more in name than in reality. It is also of little moment whether it be the fact, that insanity passes through the three progressive stages of *monomania*, *mania*, and *dementia*. It is certain that *dementia* is generally preceded by simple deranged intellect; it is almost certain that both depend on material morbid conditions of the brain or of its membranes; and it is quite certain that when combined with palsy, insanity always depends upon some morbid state of the brain, or of its membranes, or of both, which tends, with variable degrees of rapidity, to the extinction of life.

On one more topic a few words in the way of cumulative evidence may be added. The connexion between mental derangement and convulsive motions of the voluntary muscles has been long and repeatedly remarked; nor has the transition of epilepsy into mania and fatuity escaped notice. Little doubt can be entertained that epilepsy, if long continued, is connected with material disorder in the organization of the brain; and if any one be sceptical as to the pathological origin of that disease when combined with mania or fatuity, the dissections of Greding, already so often quoted, may suffice to convince him. It is pleasing to find this connexion illustrated by the researches of M. Bayle, who found convulsive phenomena of various forms and degrees in one-fourth of his cases. These phenomena consist of spasmodic agitation, continued or periodical; tremulous motions of the muscles; involuntary grinding and gnashing of the teeth; convulsions of several members or of the whole person; involuntary rigid contractions of the muscles of the extremities; local or general tetanic motions; and convulsive, epileptiform, or distinct epileptic attacks. These irregularities in the muscles of voluntary motion take place during the course of the first and second periods of the disease, and may be continued to the third. In other instances they appear in the third only; but in both cases they continue till the fatal termination.

The facts now stated, when properly understood, afford the explanation of the assertion often advanced in practical works, that epilepsy is one of the causes of insanity. To this erroneous representation the same remarks which were already mentioned in reference to palsy are applicable. Epilepsy and insanity are merely connate effects, simultaneous symptoms of the same morbid change going on in the brain or its membranes; and as both are the result of the same common cause, neither can be justly said to be the cause of the other. This inference, we conceive, will derive stronger confirmation from every case which is necroscopically examined with the necessary attention.

The views now delivered suggest important hints for the treatment of mental disorders. Upon this part of the subject, however, it is impossible at present to enter. For this, therefore, as for several other topics, we must refer our readers to the works themselves. It is not meant to represent these works as affording perfect or satisfactory explanations of all the complex and discordant circumstances in the pathology of insanity. They, however, contain a large proportion of valuable information, from which future observers may derive the utmost advantage in their researches on this disease. In this respect they well deserve the sedulous examination of those who would understand the nature of the several forms of mental derangement.

From the *Lancet*.

ON THE CONDITION OF THE BLOOD AND THE VESSELS IN INFLAMMATION.*

The numerous experiments of Haller, and Spallanzani, and the more recent ones of Doellinger, Thomson, and Hastings, might seem to have completely exhausted the information to be derived from the use of the microscope, with regard to the phenomena of inflammation; it appears, however, from Dr. Kaltenbrenner's most elaborate work, that this is by no means the case; his observations, in some respects only, confirm those of his predecessors; but in others evidently lead to contrary results.

Our author has chosen for his observations the organs of animals of three different classes: the tail of the cobitis fossilis, the web of the frog's foot, the lungs of the frog and salamander, the mesentery and liver of the frog, the mesentery, liver, and mucous intestinal membrane of the rat and rabbit, and the spleen of the mouse. The means by which inflammation was excited in these organs, were also very various; incision, contusion, and puncture; laceration, pressure, burning, cold, and heat; exposure of the intestines to air, water,

and different gases; hunger and poisons; especially sublimate, ammonia, alcohol, opium, and the muriates of soda and ammonia, were successfully employed for this purpose. The action of these different means on the living body, produced infinite modifications in the circulation of the blood, and in the vessels; all which, considered under a certain point of view, the author is led to regard as being founded on one and the same organic process.

After death, the arteries are found empty, the blood having entirely passed into the veins; this phenomenon was well known to Haller, and he observed it very accurately in the mesentery of the frog. The successive changes which, by means of the microscope, are seen in an organ at the moment of its being deprived of life, are the following: on the approach of death, the column of blood in the arteries gradually diminishes in size, till, at last, the vessels contain only half of the usual quantity; the stream is uninterrupted, rapid, and without any visible pulsations, which, however, may be observed after some time, corresponding with those of the heart, and gradually becoming more and more distinct; at last, however, they become unequal and indistinct, and, at the same time, the column of blood decreases, till it disappears entirely; the arteries are now quite empty, and organic life is extinct. Whilst the arterial stream is uninterrupted, no disturbance is observed in the veins; but as soon as the arterial circulation becomes unequal and irregular, the blood is accumulated in the veins; and from the moment that no more blood is carried into them, that which they contain stagnates entirely, retaining however, for some time, an undulatory motion, passing into the branches, and then returning again; these undulations gradually diminish, and become reduced to smaller limits; the globules of the blood are conglomerated, all spontaneous motion ceases, and the mechanical laws determine its further direction. This undulation of the venous blood is observed not only in dying animals, but also in parts divided from the living body, and in those which, by a very tight ligature, have been separated from the system. In these cases, the arteries are emptied as soon as they receive no more blood; the fluid of the capillary vessels, from this moment, is thrown into undulations, which press the blood towards the veins, and, lastly, terminates in complete stagnation. This fact is a decisive proof, that the motion of the blood in the smaller arteries, and especially in the capillary system and veins, is, in some degree, independent of the action of the heart.

It is a general opinion, that after death the blood is equally distributed to all the organs of the body, unless any of them had been the seat of inflammation; this is not the case: in the extremities, the serous membranes, the lungs, &c., the blood retires from the capillary system into the larger veins; in other organs, as, for instance, in the spleen and liver, the capillary vessels do not completely empty themselves. It is very interesting to observe

* Experimenta circa statum sanguinis et vasorum in inflammatione, aort. J. Kaltenbrenner, M.D., and Magendie's Journal.

that in fishes, the blood of the smaller vessels is not emptied into the veins, but that from the moment when the circulation is arrested, it is infiltrated into the cellular tissue, where it is found in reddish masses; a fact, which can only be accounted for, by assuming that these small vessels are canals without proper parietes. In the liver of the frog, the same appears to take place, but not in that of the rabbit, which, after death, is found most beautifully injected.

M. Kaltenbrenner endeavoured to distinguish the red and white substance, which some anatomists say they have discovered in the structure of the liver; but having never succeeded, he doubts the existence of these two substances, and accounts for the error of these anatomists in the following manner: the small acini which compose the substance of the liver are surrounded by a net-work of veins, in which the blood stagnates after death; when seen by the naked eye, the circumference of the acini appears of a red, and their centre of a light colour; but under the microscope, this centre is found to consist of a very dense vascular net-work, from which the veins of the circumference arise; according to the greater or smaller quantity of blood accumulated in the liver, the centre of the acini appears of a pale red, or dark-red colour.

In the spleen, the small vessels undergo a very singular change at the moment of death. During life, the distribution of the vessels in this organ is very similar to that in the substance of the liver; after death, the same phenomenon takes place as in the capillary system of fishes; the smaller arteries and veins, and the capillary vessels, emit their blood into the cellular tissue, where it is found in red masses; the larger arteries and veins only retain their blood, of which, in the smaller vessels, no trace can be discovered; this accounts for the general opinion that, in the spleen, the arterial blood is poured into cells, from which it is taken up by the veins; at the same time, it explains why all attempts to inject the arteries of the spleen from the veins have failed. Whoever has examined the edges of the spleen of the mouse under a microscope, will be convinced that after death the blood of the capillary system is infiltrated into the parenchymatous tissue, but he will never, during life, observe its emission into cells.

On examining, after death, the mucous membrane of the small intestines, it appears, even to the naked eye, that a small portion of the blood is retained in the capillary vessels, the rest being carried into the larger veins.

The changes which the circulation of inflamed parts undergoes after death, is very different from those observable in healthy organs. The blood is conveyed from all parts with accelerated motion, towards the centre of inflammation; the arterial is not changed into venous blood, and its coagulatory power is much increased. If in this state death takes place, the column of blood in the surrounding vessels diminishes in size, and the blood accumulates in the inflamed part, so that at last

the peripheric vessels are perfectly emptied; at this moment the circulation ceases, but for a considerable time afterwards undulations are visible, by which the blood is gradually carried towards the centre of inflammation, and which insensibly terminate in stagnation. This motion, subsequent to the death of the animal, is also observed in the newly-formed vessels. In a lesser degree of inflammation, the blood is only accelerated in its motion, and does not approach to a complete stasis; the centripetal undulations are also visible, but ultimately the blood is carried into the veins. In such cases the inflamed parts exhibit hardly any redness after death.

It appears, that in some organs, inflammation is more disposed to form the inflammatory centres described above, than in others; in the latter division, to which the serous membranes seem especially to belong, exudation is most frequently observed. If cold water is injected into the peritoneal cavity, inflammation is soon excited, and quickly followed by exudation; the afflux of blood is so violent, as to make the membrane appear like a net-work of injected vessels; from the moment that life ceases, the blood gradually leaves them, and is completely poured into the veins, so that, after death, but very slight traces of the preceding inflammation can be perceived.

The abdomen of an animal being opened, or its intestines and mesentery being drawn out, the contact of atmospheric air soon causes inflammation, which increases very rapidly in the mesentery, but slowly in the intestines. When, however, it has arrived at a certain pitch in the latter, it suddenly diminishes in the former, and gradually subsides, till at last its vessels are emptied, and the inflammation is confined to the intestines alone. The same phenomenon takes place if the mesentery is first irritated, and the intestine is afterwards exposed to any exciting cause. It seems, then, that inflammation is much more readily excited in the serous membranes, than in the organs which they envelop, but that it subsides very rapidly, and in the same proportion, as it increases in the intestines. The tissue of the lungs appears also to be little disposed to form inflammatory centres, while in the liver the contrary obtains. The circulation of the latter organ is, even in the state of health, very slow and favourable to considerable accumulation of blood; in inflammation, it is first accelerated, but gradually retarded, and, lastly, a complete stagnation takes place. The same is observed in inflammation of the spleen.

Violent inflammation of the mucous intestinal membrane, often leaves no traces whatever; the blood with which, during life, the capillary vessels were gorged, is, after death, so completely conveyed in the veins, as to render this membrane almost as pale as in its healthy state; this is even most striking in the most acute inflammation, so that in this respect, the mucous are apparently very similar to the serous membranes.

We need hardly observe, that these observations ought to make us very cautious in de-

termining by post-mortem examinations, whether any of these organs have, during life, been the seat of inflammation.

When the capillary vessels are wounded, scarcely any extravasation appears to take place, only a few globules escape, and the circulation through the wounded vessels is not at all disturbed, but continues as before. If very small arteries are divided, the hemorrhage is also very trifling; but the blood ceases to circulate through the wounded vessels, and passes entirely into the arterial branch next above the division. When a larger artery is divided, a considerable hemorrhage ensues from the two ends, and the blood of the neighbouring arteries is seen moving towards the wound as towards a centre; after some time, an undulatory motion is observed in the ends of the arteries, so that at one moment the blood moves towards the point of division, and, in the next, returns into the vessel; these undulations gradually decrease, till the movement of the blood towards the divided extremities ceases entirely, the blood being carried through the next arterial branches.

We strongly recommend to our readers an attentive perusal of Dr. Kaltenbrenner's work, and seriously regret, that want of space prevents our giving more than a very imperfect abridgment of it.

From the Archives Generales de Medecine.

OBSERVATIONS CHIRURGICALES SUR LA RESECTION DES COTES. Par L. CITTADINI.*

Among the new and apparently formidable operations with which surgery has been enriched in modern times, there are few which excited so much interest when proposed, and subsequently experienced so much neglect, as excision of the ribs. This operation was first performed in January 1813, by the author of this memoir, who read an account of it to the *Accademia del Petrarca d'Arezzo*. In 1818 it was unsuccessfully performed by M. Riche- rand, to whom the credit of originating it has been unjustly attributed. Finally, in 1820, the case of M. Cittadini was published in the *Journal Complementaire, &c.* The memoir now under consideration is made up of this case, and of four others, in which the operation was followed by complete success.

Case I. This case, detailed in the journal above mentioned, is that of a female who had long laboured under fistulous ulcers in the left mamma, the consequence of a badly treated abscess; they had been repeatedly laid open, and caustic applied, but without advantage. Upon examination, M. Cittadini ascertained that a portion of the sternum and the cartilages of the sixth and seventh ribs were denuded; an incision was made upon them, and the sternum was found carious to

the extent of more than an inch; the two cartilages, for the space of about three inches, were swelled, and perforated in several places. The actual cautery, which was applied with the view of determining the exfoliation of the bone, had no other effect than that of exciting a violent inflammation of the pleura. Six months afterwards, suppuration had made its way into the cavity of this membrane, the patient was tormented by constant pain, great difficulty in respiration, and was moreover much emaciated. In this extremity M. C. resolved to remove all the diseased parts, and with this view having cut away the cicatrix and exposed the bones, he found between the sixth and seventh rib, an opening communicating with the cavity of the thorax; he divided the intercostal muscles, tied the intercostal arteries with the aid of a blunt-pointed curved needle, and cut through the diseased ribs within the ligature. He then applied a large trephine upon the affected portion of the sternum, and finally detached the isolated parts from the pleura by means of a spatula. The proximity of the internal mammary artery, prevented him from removing this membrane also, although it had undergone great alteration. The operation was long, and the admission of air into the cavity of the pleura, induced the fear of suffocation; but the wound was promptly covered with pledgets of lint spread with cerate, and the whole retained by means of an elastic bandage. Recourse was had to stimulants, frictions, and the insufflation of air into the lungs, to resuscitate the almost expiring patient. For the space of two months she experienced great difficulty in respiration, but as soon as the wound cicatrized, all the unpleasant symptoms disappeared, and she was restored to perfect health.

Case II. A man had had for some time a fungous tumour situated upon the cartilages of the sixth, seventh, and eighth ribs, about an inch from the xiphoid cartilage. Both the knife and actual cautery had been repeatedly employed for its removal, but without success. M. Cittadini, believing that the disease originated in the ribs, resolved to remove them. He made an incision around the tumour, and dissected up the integuments in a space about three inches in diameter; some fibres of the rectus and external oblique muscle were then detached, and the cartilaginous portion of the ribs exposed. The disease was now ascertained to be limited to an extent of about two inches. By means of a strong probe-pointed bistoury the cartilages were divided, and upon elevating the diseased portion with a spatula, it was found to be strongly adherent to a fungous mass beneath, the rupture of which gave rise to a copious hemorrhage; this was arrested by the aid of the actual cautery, and cicatrization, though it advanced slowly, was complete at the expiration of three months. During all this while no unpleasant symptom supervened, and up to the present time, the patient continues in perfect health.

Case III. A young man of a vivid imagina-

* Annali Universali di Medicina.

tion, sanguineous temperament, and robust constitution, in a paroxysm of delirium arising from inflammation of the cerebral membranes, wounded himself with a stiletto in the left side of the thorax. The instrument entered below the nipple, and gliding along the superior margin of the cartilage of the sixth rib, was ultimately arrested in its osseous portion. Considerable hemorrhage followed, but was easily arrested; the fever soon subsided; the wound suppurated, and two months afterwards a fistulous orifice had formed, leading to the diseased bone. The disease having been treated in vain by incisions and the caustic, M. Cittadini was consulted after the lapse of eleven months from the time of the accident. On examination, he found that all the cartilage and a portion of the bony part of the sixth rib was rough and denuded, and decided upon its removal. With this view he dissected off the integuments, and ascertained that the disease extended in length about an inch and a half; the cartilage was divided by means of a probe-pointed bistoury, and the osseous portion by the aid of the cutting forceps. The principal arteries were tied, and the hemorrhage from the smaller branches restrained by means of compression; lastly, the diseased portion was carefully separated from the subjacent parts. During the operation the pleura had been opened in several places. The respiration was at first short and laborious, but at the expiration of some hours, it became natural. The wound was completely cicatrized at the end of two months, and the patient, who recovered completely, has never since experienced any affection of the breast.

Case IV. A very robust man, æt. 50, was attacked with pleurisy of the right side, the symptoms of which, though very violent at first, yielded however, readily, to the appropriate means. During his convalescence, a hard tumour, painful upon pressure, made its appearance beneath the right breast, and upon the cartilage of the sixth rib near its sternal articulation. It slowly passed into the suppurative stage, and opened externally at the expiration of two months; a very narrow fistula ultimately formed, which for the space of ten months obstinately resisted every remedial measure. As soon as M. Cittadini

had recognised the nature of the malady, he resolved to remove the portion of the rib which kept up the disease. Appropriate incisions were made through the integuments, but in consequence of the thickness of the layer of adipose cellular tissue lining the parietes of the thorax, he was unable to divide the cartilages with the bistoury as in the preceding cases, and was obliged to make use of the lenticular knife used in the operation of trephining. The subjacent pleura, greatly thickened, was divided in several places. A very profuse hemorrhage took place from the divided and torn branches of the intercostal arteries, but was soon arrested by a compress and bandage methodically applied. The author does not mention whether the opening of the pleura produced difficulty of respiration. The patient was completely cured at the end of six months.

Case V. A young woman had been troubled for several months with a fistulous sinus on the left side of the breast, terminating in the third rib, which was denuded. This affection, which arose from a severe contusion, was situated on the superior margin of the rib, near its union with the cartilage. M. Cittadini removed the diseased part in the same manner as in the preceding cases, except that he spared the whole inferior portion of the cartilage which remained sound. The cure was completed in about two months.

From the cases which I have detailed, observes M. Cittadini, it results that the excision of the ribs is not so dangerous an operation as surgeons have hitherto supposed, and that the hemorrhage arising from the division of the intercostal arteries may be easily arrested by compression, when the operation is performed on their sternal extremity; the ligature being necessary only when the middle or posterior part of these bones is to be divided. There are few surgeons who have not seen caries of the ribs productive of fatal consequences. It is well known that profuse suppuration, continuing for months and even years, is generally productive of marasmus and death. It is therefore very gratifying to know, that we may, without incurring any very great risk, remove, by means of the knife, all the diseased bones which keep up the suppuration.

Medical and Philosophical Intelligence.

Blisters in the early stage of Measles.—The *Lancet* of 27th September, contains the following communication from Mr. Matthews, member of the Royal College of Surgeons.

"I have had extensive opportunities of witnessing a great many cases of measles with its attendants, viz. inflammation of the lungs, and continued chronic cough, and have seen it treated according to common principles,

with variable success. I am therefore induced to recommend a plan of treatment which, for its simplicity and utility, I think, cannot be surpassed, having more than a hundred times adopted it, and with a success which has entirely exceeded my most sanguine expectations. I am, therefore, convinced, that the disease may be cut considerably shorter, and many valuable lives saved, to the comfort of

numerous families. I do not mean to put it forth as a novelty, but so far as I have any knowledge, it has not been employed in the manner I am about to mention. It is simply this—As soon as the first symptoms of the complaint show themselves, such as sneezing, with defluxions from the nose and eyes, and before the eruption appears, the prompt application of a blister to the chest, (of course with other suitable remedies,) seems to act like a charm, in most cases entirely preventing any affection of the lungs supervening. I have lately treated three cases, two according to the plan already laid down, and one upon the common principles of our best physicians, the parents of the child being averse to blisters. The latter is now scarcely recovered, after being ill six weeks; the two former were perfectly recovered in a fortnight. I shall not attempt to explain the *modus operandi* of blistering early, but the conclusions, I think, to be drawn, are these:—

“1. That the disease is rendered shorter and milder; 2. That the disposition to inflammation of the lungs, and its consequences, if not entirely prevented, is very much mitigated; 3. That the patients are not more predisposed to colds or coughs, than others in whom no disease had taken place; and, 4th. That the recovery is more rapid and lasting.”

Enormous Tumour of the Thorax, supposed to have been Exostosis.—In one of the October numbers of the *Lancet*, we find an account of the post mortem examination of the case detailed in vol. i. page 213, of the *Journal of Foreign Medicine*. Unfortunately for surgery, observes Mr. Parker, the gentleman by whom it was communicated, this case is strikingly illustrative of the fallibility of human judgment. The tumour, on examination, *possessed no character of exostosis, or osteo-sarcoma*; throughout, its texture was soft, though solid, and appeared to have been well supplied with vessels. To give a familiar idea of its appearance and consistency, it very much resembled adipocere, except in colour, which was for the most part, of a dingy red. On dissecting back the integument on either side, it was observed, that the left pectoral muscle was remarkably pallid and attenuated; the muscle of the opposite side presented nothing remarkable. The tumour was covered with a thin layer of adeps, without the appearance of any distinct capsule or investment. Supposing it to have originated from the sternum, I attempted to dissect it off entire, but finding it more deeply imbedded than the situation of the bone would explain, I opened the thorax in the usual way, expecting that the extent and connexions of the disease would be at once developed. This was by no means the case, and to satisfy myself as fully as possible, I extended the opening to the parietes of the abdomen, and thus found the apex of the tumour projecting with the diaphragm before it, within an inch of the umbilicus. Without disturbing any of the viscera, I endeavoured

to trace it through its whole extent; this I was in some measure enabled to do, though not completely to my satisfaction. On passing my hand between the tumour and the arch of the ribs, considerable resistance was offered from adhesions, apparently of long standing. Having accomplished its detachment on both sides, as well as the upper part, which was also adherent in a slighter degree, I continued the examination to the diaphragm; here the tumour was in close contact with the tendon of that muscle, indeed inseparably so, and on detaching it, which I could do in no other way than by cutting through the diaphragm, I found the heart healthy, but small and compressed, without its pericardium, immediately behind the tumour. The lungs were much smaller than natural, and flattened, evidently from want of space. From the examination, it appears to me, that the growth of the disease must have begun in the pericardium, and this opinion is strengthened, from the circumstance of the tumour having a distinct investment, answering to the pericardium on its under and posterior surface. The sternum was completely absorbed, not even a vestige of it remaining, and the cartilages of the ribs were unusually soft in a man approaching to 60. For a week or more, previous to dissolution, the subject of this disease was distressed with continual hiccough and sickness; the bowels had been for some time irregular, either constipated or much relaxed, and the breathing difficult, more particularly on any exertion. It may not be unworthy of remark, that the body, 36 hours after death, was quite warm, so much so, as to create some inquiry on my part. The abdominal viscera were healthy, though the stomach, which must have been much pressed on by the tumour, was smaller than natural. The weight of the whole mass, when removed, must have been little short of twenty pounds.

Hernia of the Foramen Ovale. By M. MARECHAL.—Madame G—, æt. 47, of a nervous temperament and delicate constitution, was suddenly attacked, in the night of the 9th November, with very acute pain, extending from the left lumbar region towards the hypogastrium and groin of the same side. The left leg was benumbed, and affected from time to time with pain so acute, that it seemed to the patient as if some one were tearing this part. The lumbar region was painful, but pressure could be made upon the thigh and groin without increasing the sensibility. The urine was in small quantity, high coloured, and expelled with difficulty; the pulse was small and deep; extreme anxiety and agitation. These symptoms, together with the absence of all tumour in the inguinal region, induced the belief that it was a case of acute nephritis. *Twenty leeches to the seat of pain, cataplasms of linseed meal, emollient fomentations, semicupium, emulsions, &c.*

The next day hiccough and nausea supervened. These symptoms were considered

symptomatic of nephritis, in which opinion Dr. Frissot, who had treated her some years previously for that disease, also coincided. *Twenty leeches were directed to the lumbar region—the other measures to be continued.* Retention of urine, during forty-eight hours; the patient refused to permit the introduction of the catheter.

For two days there appeared to be some amendment of the symptoms, the pain ceased, and the vomiting occurred less frequently; but all the symptoms were renewed on the seventh day. No tumour appearing exteriorly, internal strangulation was suspected, but what was the nature and seat of this strangulation? A consultation, at which MM. Marchand, Moizsin, Frissot, and Willaume were present, was held on the 16th. On that day there was a marked remission of the symptoms; an enema, given the preceding evening, had procured during the night several evacuations, and as soon as this was affected, the vomiting ceased. The diagnosis became more difficult; had there been a temporary strangulation, or was the disease acute nephritis complicated with ileus? All doubt was removed the same evening; the hiccough returned, accompanied with foetid eructations, and the next day copious and repeated vomiting of faecal matter, sufficiently attested the existence of internal strangulation. No further evacuation from the bowels was procured by purgatives taken by the mouth, or exhibited in enemata. Death took place on the evening of the 23d, the fourteenth day of her illness.

Dissection.—Acute peritonitis, with serous effusion; the omentum, drawn towards the left inguinal region, made a depression upon the intestines; its extremity was engaged in the foramen ovale, together with a flexure of the ileum, which was completely strangulated; the intestine above the strangulated portion was greatly distended with faeces, while that below was empty. The muscles of the inner part of the thigh having been divided transversely, the member was placed in a state of strong abduction, in order to ascertain the relations of the parts with each other. The sac was not larger than a filbert, formed no projection exteriorly, was situated directly behind the pubis, and surrounded in great part by the obturator ligament; it was thus situated in a space bounded by the pectineus, the middle adductor, and posteriorly by the obturator nerve and artery. Strong and numerous adhesions had formed with the surrounding parts. The intestine was softened, and tore with the least extension; there was an evident softening in the inferior half of the left kidney.

M. H. Cloquet has related, in *Corvisart's Journal*, tome XXV., a case of entero-epiplocele of the foramen ovale, which terminated fatally. There was no tumour externally, and the nature of the disease was not known till after death. When we consider, says Mr. Lawrence, how the tumour is surrounded by muscles which prevent any considerable augmentation in the volume of the sac, we should be inclined to doubt the facts relat-

ed by Garengéot, and to suppose that the disease could not be recognised during life. Are we to consider the severe pain which was seated in the thigh of the patient, whose case we have just detailed, as one of the most diagnostic symptoms? Ere we can pronounce decisively upon this point, other cases of the same nature will be necessary.—*Journal des Progres, &c.*

Action of Bromine, and of the Cyanuret of Bromine, upon the Animal Economy.—M. Barthez, of the *Hôpital Militaire de la Garde Royale*, has for some time past been engaged in researches into the effects of Bromine, the hydrobromate of potash, the deuto-bromuret of mercury, and of the cyanuret of bromine upon the animal economy. From experiments with the first and last of these four substances, he has drawn the following conclusions. 1st. Bromine, perfectly dissolved in distilled water, and injected into the veins, produces death in the dose of from ten to twelve drops, by coagulating the blood, without in any degree affecting the nervous system. 2d. Introduced into the empty stomach, the œsophagus being afterwards tied, it occasions death in three or four days; while, if the stomach be filled with aliment, it is converted into hydrobromic acid, the deleterious effects of which are much less energetic. If the œsophagus be not tied, from fifty to sixty drops will be required to produce death: in this case it is necessary that the bromine be not rejected immediately after its introduction into the stomach. 3d. Bromine, taken in an infusion of coffee, and swallowed before it has had time to become converted into bromic acid, is equally productive of fatal consequences. 4th. Bromine, introduced into the stomach of a dog, in the dose of from fifty to sixty drops, produces death, unless vomiting speedily supervenes. 5th. In its action it has a great analogy with iodine, and consequently should be placed by the side of that substance in the scale of irritant poisons. 6th. The cyanuret of bromine, like the cyanuret of iodine, should be classed among the narcotic-acrid poisons. 7th. Injected into the cellular tissue, in quantity of five to eight grains, it produces mortal symptoms, without, however, death being the invariable result. 8th. Introduced into the stomach of dogs, it occasions death only when given in the dose of four or five grains; a much less quantity is required to kill a rabbit, *cæteris paribus*.—*Jour. de Chimie Medicale, &c.*

Employment of Bromine in Scrofula and Gout. By M. POURCHE.—Of all the points of view under which we contemplate the discoveries made in science, the most important is that which presents them to us in their relations with the art of alleviating or healing our infirmities; it is in this light that the discoveries in chemistry recommend themselves particularly to the attention of physicians. Since 1826, this science has made the acquisition of a new simple substance (bromine,) the

energetic properties of which, encourage the hope that it may hereafter become extensively useful as a remedial agent. M. Pourché has conceived the happy idea of employing it in the treatment of scrofula and goitre, two diseases for which we are not yet possessed of any certain remedy or method of treatment. The cases in which he has employed it are published in detail in the *Ephémérides Médicales de Montpellier*, March 1828. In two subjects of lymphatic constitutions, the scrofulous tumours were resolved under the influence of a treatment consisting of frictions with an ointment containing the hydro-bromate of potash, and of cataplasms sprinkled with an aqueous solution of bromine. In a third instance, an atorrhœa of long standing, and a scrofulous engorgement of the testicle, yielded to the same means, and in the internal administration of the preparations of bromine. A goitre had undergone a reduction of two-thirds of its enormous volume, when M. Pourché published his observations.

M. Pourché employs bromine internally, sometimes in solution in water, and at others in the state of hydro-bromate; for the first, his formula is one part of bromine to forty parts of distilled water; this solution is given in the dose of five or six drops mixed with pure water, and the quantity gradually increased. In regard to the hydro-bromate of potash, it is obtained by the same process used in the preparation of the hydriodate of the same base. M. Pourché exhibits it in form of pills, to the extent of from four to eight grains a-day.—*Revue Médicale*.

On the Effects of the Division, or Organic Lesion, of the fifth pair.—It appears from the experiments of M. Magendie, H. Mayo, and C. Bell, on the action of the cerebral nerves, that on the division of the fifth pair, or when it is in a diseased state, the eye undergoes some peculiar morbid alterations. M. Magendie informs us (*Jour. de Physiol. IV.*,) that after the division of this nerve, the cornea becomes opaque, and that it, as well as the iris, begins to inflame and suppurate; an effusion of lymph takes place in the interior of the eye, and gradually the whole globe passes into ulceration. All these experiments, however, did not satisfy M. Magendie, and could not, in fact, lead to a clear result, as, on dividing the nerve, the internal carotid was invariably wounded; he therefore, in more recent experiments, divided the nerve before it passes over the pars petrosa, and then obtained an effect somewhat different from that described before; the eye was much less altered, the inflammation occupied its upper portion only, and but a very small segment of the upper circumference of the cornea became opaque. It appears, then, that the fifth pair of nerves exercises a direct influence on the nutrition of the eye; the different results of the experiments are easily accounted for by the circumstance, that in the former experiments of M. Magendie, the ophthalmic artery

was separated from the internal carotid, and that thus the nutrition of the eye necessarily became affected.

The following pathological fact, reported by M. Serres, confirms the experiments of M. Magendie. A young man was admitted in the Hôpital de la Pitié, on account of epileptic attacks; at the same time a slight inflammation of the right eye was observed, the cornea was opaque, and the sight was to a considerable degree affected. All these symptoms gradually increased, till the sight was completely lost, and the right eye and eyelid, as well as the right side of the nose and tongue, were quite insensible. The patient died eleven months after admission, in a violent epileptic fit. On examination, the ganglion of the fifth pair was found enlarged, of a yellow colour, and very vascular; and on its exit from the pons varolii, the nerve was covered with a gelatinous mass.

Professor Mayer, of Bonn, (*Journ. der Chirurg. u. Augenheilk.*,) has recently performed many experiments, from which it appears, that not only the division of the fifth pair is followed by morbid changes of the eye, but that the same effects take place after wounds of the neck. From eighteen experiments on dogs, horses, and pigeons, he comes to the following result: 1. The division of the cervical portion of the sympathetic nerve was sometimes made without any effect on the nutrition of the eye; in other cases it was followed by redness and inflammation of the conjunctiva; 2. The same morbid change, in most cases, followed the division of the pneumogastric nerve; 3. The sympathetic and pneumogastric nerve having been divided, a very intense inflammation of the eye took place, which extended to its internal parts; 4. If the carotid was tied, and at the same time the nerves in its neighbourhood were carefully avoided, the nutrition of the eye was in no manner influenced; 5. After a ligature of both carotids, the eyes suffered more or less; they became dim and opaque, but very seldom, a complete disorganization ensued; 6. But if the ligature comprised the pneumogastric or sympathetic nerve, an effusion took place from the anterior surface of the iris, the pupil was closed by a false membrane, and the cornea passed into suppuration.—*Lancet*.

Employment of General and Local Bleeding in Cases of Poisoning.—In every case of poisoning, the first indication is to prevent the absorption of the deleterious substance, and to occasion its evacuation from the body as speedily as possible. In some very ingenious experiments, M. Magendie observed, that, when a state of artificial plethora was induced by injecting warm water into the veins, the absorption of the poison was suspended, and its effects arrested. The operation, however, is difficult to perform, and few persons would be found willing to submit to it. M. Verniere imagined, that by producing this state of local plethora by means of a ligature, and permitting

the blood on the distal side of the ligature, loaded with the poisonous matter, to flow out, the same consequences would result; to test the truth of this conjecture, the two following experiments were performed.

Three grains of the alcoholic extract of *nux vomica*, prepared by M. Pelletier, were spread upon a wound made in the right cheek of a small dog; six minutes afterwards, during which time the operator moderately compressed the jugulars with his fingers, a large orifice was made in the jugular vein, and the blood permitted to flow freely; the animal, when placed upon his feet, experienced only a slight degree of weariness.

In the second experiment, three grains of the extract were introduced beneath the skin covering the dorsal surface of the right fore-foot of another dog, and a tightly drawn ligature applied; five minutes afterwards, the wound being made quite clean by washing off the poison, the ligature was removed, and the animal, placed upon its feet, walked quietly along, but in a little while was seized with tetanic convulsions of extreme violence; a large opening was immediately made in the jugular vein, the blood flowed copiously, the convulsions ceased in about thirty seconds, and the animal, set at liberty, walked as well as before; the only symptom observable was a rattling sound in respiration, which soon disappeared. In this instance the ligature, by suppressing at the same time the arterial and venous circulation, had prevented the production of plethora, the cellular tissue was in consequence impregnated with the poison, and however carefully the wound might have been washed, the quantity absorbed was sufficient to induce, upon the removal of the ligature, tetanic symptoms of the most violent character.

From this experiment some important practical results may be deduced. It demonstrates, in the first place, the inutility of a ligature, though very tightly applied, when the poisoned blood included by it is not also evacuated; it also shows, (and it is a fact of high interest in toxicology,) that even after a poison has penetrated into the torrent of the circulation, the evil is not beyond the resources of art, but that it is possible, by means of copious general bloodletting, to reach the poisonous substance and drive it out of the system.—*Jour. des Progrés, &c.*

Superfœtation; by Professor WENDT, of Breslau.—A woman bore twelve children between the years 1773 and 1792, ten of whom were girls, and two boys. In three of her *accouchemens* there was a plurality of children. On the 15th February, 1781, she was delivered of a child which died the next morning, and on the 8th of the following April, 52 days afterwards, she gave birth to another child, which is still living, and married. August 4th, 1786, she was delivered of an infant which died eleven days after birth, and on the 30th of the succeeding month, another was born, which also is still living, and married.

Finally, October 25th, 1791, she gave birth to a child which died on the 10th November of the same year, and two days afterwards, she was delivered of another, which died the same day. All these children were females. Professor Andrée, from the statement of the mother, that the first children of the two first mentioned pregnancies, had lived and taken the breast like those who have arrived at the full term, considers these two double pregnancies as the product of a true superfœtation. Professor Carus, on the contrary, thinks that the children alluded to had not arrived at the full term, from their dying almost immediately after their birth, while those who were born later continued to live. He believes that when the uterus does not possess the proper degree of energy to contain and permit the evolution of two fœtuses, one is expelled, or dying, is retained in its cavity by the side of that which survives, which must happen when there is only one placenta. Professor Rudolphi explains these three instances of double pregnancy, by supposing the existence of a double uterus, one of which may have been less developed than the other, and founds this opinion upon the fact related by Cassan,* that one of the children was born fifty-eight days later than the other. After the expulsion of the first child, the midwife found the uterus empty, and by its side a moveable tumour, the nature of which she was unable to determine, and which must have been the second uterus containing another fœtus. Dr. A. E. de Siebold regards these opinions as admissible, but he is unable to determine to which the fact in question should be referred. As to the opinion of Oslander the father, who pretends that a double pregnancy cannot exist with a double uterus, it is completely overturned by the case related by Cassan.—*Jour. des Progrés, &c., from the All. Rep. Jan. 1826.*

Case of Chronic Pemphigus; by Dr. ASDRUBALI.—Anna Balbi, at 10, was attacked with general rheumatic pains, which continued throughout the winter, and did not cease till after the lapse of six months. In the spring, vesicles or ampullæ, characteristic of pemphigus, made their appearance, first on the fingers, six or seven days afterwards upon the thighs and feet, and ultimately extended over the whole body, with the exception of the hairy scalp. They came out suddenly, had an irregular form, and exceeded a filbert in size. A slight erythematous inflammation was observed around the base of some of them, and all contained a yellowish serum; they opened spontaneously, and were converted into a black or red scab, the fall of which was speedily followed by new ampullæ. The eruption was unaccompanied with fever.

The disease had continued twenty months,

* *Recherches Anat. et Physiol. sur les Cas d'Uterus Double et de Superfœtation*; par A. L. Cassan. Paris, 1826, in 4to, p. 51.

when Dr. Asdrubali saw her for the first time; the patient, pale and emaciated, was unable to stand, the integuments were almost wholly ulcerated and covered with encrustations, which discharged large quantities of pus. The slightest friction was sufficient to give rise to ampullæ. Dr. Asdrubali directed sulphur to be taken internally, and externally lotions with a decoction of elm bark, while the encrustations were anointed with butter to preserve them in a state of cleanliness, and to prevent the contact of irritating substances. After this treatment had been continued a month, the ampullæ had extended even over the scalp, and had increased in size and number; the vesicles were entirely yellow, as if sulphur were mixed with their contents, and in colour the encrustations appeared like fragments of this mineral. The administration of the sulphur was suspended, and some of the preparations of iron substituted, which, with the occasional use of the warm bath, completed the cure.—*Bull. des Sciences Médicales.*

Calculus situated within the Glans Penis, removed by Incision.—A young naturalist, while voiding his urine, perceived a rough and unequal body passing along the urethra, which was arrested at the base of the glans; this happened in 1807. The evacuation of urine and emission of semen being little impeded by this accident, and the patient unable to discover the foreign body by the touch, he did not resort to proper means for its extraction. In the years 1814, 1818, and 1819, he passed gravel with his urine, and the last year particularly, every evacuation was attended with great pain. Little solicitous about the state of his health, he did not notice the increased size and induration of the glans, or rather, supposed that this condition was natural. In 1822, he married, and had children: the act of coition was attended with no pain or difficulty. Three years after his marriage, the ardor urinæ with which he had long been troubled, increased considerably, and frequently drops of blood followed the evacuation of urine; to these symptoms violent nephralgia was added, which induced the patient to apply to a physician, but no thorough examination was instituted. In 1826, other symptoms, such as loss of appetite, sleeplessness, melancholy, emaciation and inflammation of the prepuce, led him again to seek medical assistance. The inflammation having been subdued, a calculus was found, upon examination, situated at the anterior extremity of the urethra, about the fossa navicularis. A directory was introduced in front of the calculus, and the upper portion of the glans, together with the prepuce, was divided by means of the bistoury; on separating the lips of the wound, the calculus was seen occupying all the interior of the glans, and extracted without difficulty. The cavity containing it was slightly ulcerated. No unpleasant occurrence followed, and the patient entirely recovered. Although

the tissue of the glans was almost entirely destroyed, being reduced to two thin lamellæ by the operation, it reacquired its natural form. The calculus was solid, had the form of a chesnut, and was of a dirty white colour, with some reddish spots; the greater part of its surface was smooth. The base, which was nearly circular, measured three inches (French) and seven lines in circumference; its greatest diameter was one inch and one and a half lines; it measured an inch from the base to the summit. A few days after its extraction the calculus weighed 284 grains.—*Bull. des Sciences Médicales.*

Mr. Lizars' Method of Amputation.—In amputation of the thigh, arm, and fore-arm, Mr. Lizars makes two flaps, cutting from without inwards, with the knife the same length as the longest used by Lisfranc, with this difference, however, that it has only one cutting edge. In amputation of the thigh, he makes the outer flap first, cutting nearly transversely to the bone, the incision pointing a little obliquely upwards towards the trunk; he then carries it along the outer edge of the bone, four or five inches, in the same direction, according to the muscularity of the limb. The inner flap is made to correspond precisely with the outer; the assistant instantly grasping the inner flap, and thus completely commanding the artery; so that, if the operator chooses, he may with safety perform the operation without a tourniquet.

The superiority of this mode of amputation over that of transfixion, is said to be, that the surgeon can lengthen his flaps as much as he pleases, even in the middle of the operation, if he considers them too short to cover the bore; besides, he cuts in the same line of direction; whereas, in transfixion, he cuts first from, and then towards himself. In this mode also the flaps are much fuller and thicker; and no lower third flap can possibly remain, as in transfixion.

Uterine Hemorrhage.—The introduction of the hand into the uterus is a very general practice in those cases of uterine hemorrhage which occur soon after delivery, and depend principally on a complete atony of the uterine fibres; it is but too well known how often our purpose of exciting contraction fails, and in how short a time the patient, in spite of all our endeavours, will sink under the effects of depletion. In such alarming cases, Plourquet first recommended pressure on the abdominal aorta through the parietes of the uterus, or by pressing on the belly; we think that the following cases will impress our readers with a favourable opinion of the practice.

Dr. Eichelberger was called to a lady who had been attacked very soon after delivery with profuse hemorrhage; he found her almost swimming in blood, with a pallid face, cold sweat, senseless, and in convulsions; the pulse could not be felt, the extremities were cold, &c. Cloths dipped in cold water had

been applied to the belly, but without any effect. Dr. Eichelberger introduced his hand into the uterus, and with his fingers compressed the aorta, the pulsation of which was very distinctly felt. The hemorrhage was instantly stopped, but the uterus showed no disposition to contract. The hand was accordingly retained in its position, and tincture of opium and cinnamon given internally. After an hour the uterus began to contract, and the hand could be safely removed. Dr. Eichelberger followed the same practice in two other cases of alarming hemorrhage, and found it equally successful. The relaxation of the uterus was so great, that the hand could be easily moved towards any part of the abdomen, and the rolling of the intestines could be distinctly felt.

Another case of uterine hemorrhage, where compression of the aorta was employed with success, occurred in the obstetrical clinic of Berlin, under Von Siebold's superintendence. The child had been turned, and delivery had been very difficult; after removal of the placenta, a most alarming hemorrhage took place; cold water to the belly, injections of water and vinegar, the internal use of ether, tincture of cinnamon, and phosphoric acid, had been employed without any effect, and the patient was evidently very near her dissolution, when one of the assistants began to compress the abdominal aorta by external pressure on the abdomen. The hemorrhage was staid almost instantly, and the patient very slowly recovered.—*Lancet*, from *Seibold's Journ.*, *Gebertshuelfe*, &c.

Nymphomania cured by cauterization with Nitrate of Silver.—M. Ozanam, of Lyons, transmitted lately to the Royal Academy of Medicine, a case of nymphomania in a woman 30 years of age, who having miscarried three successive times, towards the fifth or sixth months of her pregnancy, was seized with a violent attack of furor uterinus. Her husband refusing to satisfy her inordinate desires, she gave herself up to continual masturbation. Some general remedies for a time calmed the violence of the attack, but it soon returned. M. Ozanam was consulted, and found the external parts of a burning heat, the labia tumefied and red, the clitoris about an inch in length and very hard. The nymphæ were also swollen, with small ulcerations on their surface; these were touched with a solution of lunar caustic in water for two or three days, and afterwards with the caustic itself; she was also kept to a very rigid diet. After the fourth application the inflammation of the parts had almost disappeared, and the patient was nearly cured.—*La Clinique*.

Mercury.—M. Colson, surgeon to the Hôtel Dieu de Noyon, who has long been engaged in investigating the effects of mercury upon the system, has recently succeeded in detecting the presence of this mineral in the blood of persons to whom it had been administered. In one instance, a young man had swallowed, by

mistake, four or five ounces of the liquor of Van Sweiten; violent fever supervened, requiring venesection. Furnished with a plate of burnished brass, M. Colson directed the jet of blood upon it, and left it in the basin for the space of twenty-four hours, at the end of which time, mercurial stains upon the brass became evident. A similar result was obtained in the other instances. Fourcroy relates in his translation of Ramazzini, that the serum having been collected from a great number of phlyctenæ, which appeared upon the thighs and legs of a gilder, an infinite number of mercurial globules was found in the bottom of the vessel containing it. M. Gaspard has found them in the alvine evacuations; Petronius in the matter ejected by vomiting, where the mineral had been employed in frictions; Rhodius, Breyer, Valvasor, Guidot, Vercelloni, Burghard, Didier, Haeschter, and recently Dr. Cantù, of Turin, in the urine. It has been found in the bones, synovial membranes, in the pleura, and in the lungs. In our own day, M. Dumeril has found it in different parts of the body; MM. Orfila and Pickel have obtained it by distillation of the substance of the brain and nerves; and it is stated in the last number of the *Bull. des Sciences Medicales*, that Professor Hunefeld, of Griefswold, has found it in its metallic state in the semi-liquid contents of a lipoma.

Salt of Rigatelli.—The febrifuge virtues attributed to this preparation,* have induced M. Ricci, physician to the hospital of Turin, to repeat the experiments of his countrymen. Three cases of intermittent fever are detailed, in which it was given to the extent of forty and sixty grains during the apyrexia; in each of the three instances it failed entirely, and they were ultimately cured by the sulphate of quinine, or the bark in substance. M. Ricci observes, that it can by no means be considered a substitute for the cinchona, or even be compared to that article.—*Revue Medicale*.

Remarks on the Stomach.—It appears, according to Soemmering, that the stomach of the negro differs from that of the European, in being more rounded, and liker to that of the monkey. This rounded shape is particularly remarkable in the large extremity.

The straitening which is found in the middle of the stomach in certain individuals is almost exclusively met with in women, and he supposes it to depend upon their dress. There is no trace of it in infants.

The opening of the pylorus differs in different persons, and four principal modifications are represented in corresponding engravings. These varieties depend principally on a glandular ring, which is pretty firm, and forms the border of the opening, and may be seen on elevating the peritoneum and subjacent cellular tissue with ease.—*Denkschriften d. K. Akad. d. Wissench za. München*.

* Vide Journal of Foreign Medicine, Vol. II. page 473.

Caries of the Sternum treated by the Actual Cautery. By M. BEAUCHENE.—The patient was admitted into the Hôpital Saint Antoine, with an ulcerated tumour, situated in front of the sterno-clavicular articulation; it made its appearance about four months before, in form of a pimple, and without any known cause. He had never had syphilis, nor had previously experienced any deep-seated pain in the diseased part, but had suffered much from acute rheumatism, which was located principally in the shoulder joints. A sero-purulent liquid flowed from the ulcerated surface, and upon examination the sternum was found denuded and carious, notwithstanding which the articulation was free, and motion in no degree impeded.

July 16th.—M. Beauchêne made a circular incision over the tumour, dissected up the flaps, and exposed the bone, which was surrounded by soft, bleeding and fungous vegetations, easily detached with the finger nail; the cautery, heated to a white heat, was applied over the whole diseased surface. Two hours afterwards, a considerable hemorrhage took place from the wound; the patient grew pale, became extremely feeble, and his pulse was scarcely perceptible. The dressings were removed, and the blood was seen to flow *en masse* through the spongy tissue of the sternum,—it was arrested by means of compression with pieces of agaric. On examining the wound at the expiration of four days, the disease was found still unarrested, and pus flowed at each inspiration from the cells of the sternum. The cautery was again applied, and the wound dressed with pledgits of lint spread with cerate, and a poultice, as before. The next day erysipelas made its appearance around the wound, and soon extended to the neck, ear, scalp, and ultimately involved the face, which became enormously swelled, tense and painful; large phlyctenæ made their appearance, and the patient laboured under all the symptoms of great cerebral congestion; intense cephalalgia, difficulty in articulation, delirium, &c.; the digestive organs remained unaffected. Three large bleedings were successively performed, and other measures adopted, with the effect of removing these urgent symptoms. During the eight days the erysipelas continued, the wound ceased to suppurate, and the granulations became flaccid, and of an unhealthy appearance; but as soon as the symptoms subsided, they assumed a more favourable appearance, and the suppuration was re-established. Cicatrization advanced rapidly, and by the 20th August, the wound was reduced to three-fourths its former size; some small pieces of bone remain to be detached, after which the wound will probably speedily heal.—*Nouvelle Bibliothèque Médicale, &c.*

Treatment of Dropsies.—The September number of the *Revue Médicale* contains some observations by M. Guibert on the application of the *methode iatraleptique* to the treatment of dropsies, and particularly of ascites.

This method consists in the employment,

two or three times a day, of frictions with the following liniment upon the thorax, abdomen, or legs, according to the seat of the disease. Tincture of squills, of digitalis, and of colchicum seeds, each half an ounce; camphorated and ammoniated oil, an ounce and a half. The frictions to be made with a woollen or flannel cloth, and to be continued from five to twenty minutes, according to the quantity of fluid extravasated, and the urgency of the symptoms. Diuretic beverages, and pills composed of squills, digitalis, &c. are at the same time given internally. This treatment will, of course, be varied according to circumstances; it may be sometimes advisable to suspend it for a time, or to conjoin it with demulcents, gentle laxatives, enemata, &c. &c.; and if the dropsy be recent, and the cause producing it be known, its removal by appropriate means should constitute the first indication.

The *methode iatraleptique*, observes M. Guibert, such as I employ it in the treatment of dropsies, has especially appeared to me very advantageous in ascites; and it is principally to the use of the liniment above mentioned, that I attribute the success which I have met with in the cure of that disease. The remedies given internally, have been highly useful as auxiliaries, but alone, were insufficient to produce the profuse urinary discharges, I might almost say, the artificial diabetes, which I have observed in different cases, and the rapid disappearance of the great extravasations which I have had to treat. A number of cases, corroborative of the efficacy of the plan, is related, from which M. Guibert deduces the following conclusions:

1. The cases above mentioned, and I might adduce many others, evidently prove that diuretics, when opportunely administered, and in sufficiently large doses, are, of all the remedies used in dropsy, those which are most uniformly successful.

2. The iatraleptic method, or the use of frictions, is one of the most advantageous modes of employing these medicines, inasmuch as they thus act upon a large surface, and do not fatigue the stomach.

3. It is, nevertheless, always useful to associate with it internal remedies, in order to obtain a more prompt effect.

4. This combined treatment is sufficiently active to produce, in a very short space of time, the diminution of a dropsy which has reached a considerable volume, and thus to obviate, in many cases, the necessity of paracentesis; an operation almost always merely palliative, and which must be repeatedly performed, at intervals more or less protracted, in order to prolong the existence of the patient; whereas, by the persevering employment of the plan which I have advised, we may expect to produce the complete absorption of the effused fluid.

5. Finally, this method is attended with no inconvenience, provided, the inflammatory symptoms, if any exist, have been previously removed by appropriate means. In cases complicated with organic alterations, it will even

succeed in exciting the absorbent and urinary systems, although the primitive cause of the disease still exists, and sooner or later must occasion its re-appearance. In simple ascites on the contrary, and in anasarca, or œdema of the lower extremities, its success is almost infallible.

Anasarca. By Dr. JÜGER.—The subject of the case was an old man, æt. 65, of a weak and even cachectic constitution, much addicted to spirituous potations, obliged to labour in the open air, and worn out by sorrow and privation. After having experienced, in the spring of 1824, some wandering rheumatic pains, for which he was treated by sudorific beverages, he was suddenly attacked in August of the same year with general anasarca, which soon incapacitated him for walking; his respiration became short and difficult, the debility increased, and a febrile movement manifested itself every evening. The urine was sometimes abundant, and at others almost wanting; the skin was always dry. Unable to succeed in exciting the activity of the cutaneous vessels by internal remedies, such as tartarised antimony, acetate of ammonia, arnica, &c., remedies which seemed especially indicated by the preceding rheumatic affection, Dr. Jüger had recourse to frictions with tartar emetic ointment, at first upon the abdomen, and afterwards upon the lower extremities, until these parts were covered with pustules; taking care to keep up the excitement of the skin by new frictions, in proportion as the effect of the former subsided. At the same time, tonic and diuretic medicines were given internally. The urinary secretion soon became more abundant; copious alvine evacuations, and profuse perspiration succeeded. In a little while the quantity of urine surpassed that of the fluids taken; and from this period, the œdematous engorgement progressively diminished, and after the lapse of four weeks, had entirely disappeared. The pustules caused by the ointment, furnished an enormous quantity of purulent matter. To complete the cure, Dr. Jüger directed five of the following pills to be taken morning and evening.—R. Sulph. stib. aurant. gr. x.; aloes, ʒiss.; pulv. scill. pulv. digit. purp. āā gr. xv.; crem. tart. ʒii.; ext. card. bened. q. s. ft. pil. 100.—*Grafé's and Walther's Journal.*

On the Anemia of the Hand caused by Cold. By Professor NAUMANN.—This gentleman has twice observed this affection in a very high degree. It makes its appearance especially in cold and moist weather; less frequently in proportion when the cold was very intense, and not at all in summer. The hands become pale; no blood flows when the skin is injured; the contact of a cold body is sufficient to reproduce the disease several times a day. All the symptoms disappeared under the influence of heat and the return of the blood into the affected part. The persons affected continue

very well while they confine themselves to a warm chamber, or take exercise. All the attempts hitherto made for the cure of this morbid disposition, have been hitherto ineffectual; electricity, dry frictions, stimulating embrocations, &c. have been alike unsuccessful. The proximate cause of the disease is not known.—*Bull. des Sciences Med.*

Treatment of Amaurosis by Frictions with the Ammoniacal Liniment of Dr. Gondret.—It has long been thought that amaurosis was dependent upon paralysis of the retina, but numerous experiments tend to prove, that it is still more frequently connected with lesion of the fifth pair of nerves.

Vicq-D'Azir having exposed, and bruised the frontal nerve of an animal, produced blindness; and the same results have been obtained by M. Ribes on repeating his experiments. Notwithstanding these facts, Petit de Namur having read to the academy, the case of a patient who lost his sight in consequence of a wound on the eyebrow; a very spirited discussion followed, in which the blindness was by some attributed to a fracture of the cranium; by others, to an extravasation; while others again contended that the case had not been accurately reported.

Since the experiments of M. Magendie, however, no doubt can be entertained respecting the influence of the fifth pair of nerves on the vision. This physiologist having divided these nerves in many animals, has observed as an invariable result, the eye to inflame, and the cornea to become opaque and fall forward. The following pathological fact, related by M. Serres, is corroborative of this opinion. A woman under the care of this gentleman, lost the senses of sight, taste and smelling, on one side alone. On examination after her death, the fifth pair of nerves, where it runs over the temporal bone, was found enlarged, softened, and converted into a yellowish substance.

Amaurosis then, arises more frequently than is generally supposed, from lesion of the fifth pair of nerves, and it is in these cases especially that the ammoniacal liniment proves useful. It is generally applied over the forehead where the branches of this nerve are distributed, after having traversed the orbit. It occasionally happens that the inflammation it induces, terminates in gangrene of the integuments; sometimes the patients are attacked with violent pains in the head, for which venesection is necessary; in other cases, it produces an ulcer of greater or less extent, and here its application once in two or three days is sufficient; in cases when no such effects are produced, frictions are made daily. However efficacious the remedy may be, we are not to expect a very marked improvement before the lapse of a considerable time; frequently it is not till after two or three months that the amendment is perceptible; this, however, is by no means always the case, several cases have occurred, in which an evident improvement has taken place so early as the se-

cond or third week. Several cases have fallen under our observation, in which this treatment was successfully adopted.—*Nouv. Biblioth. Médicale.*

Observations on Amber. By M. BERZELIUS.

—It is well known that amber is most commonly found in brown coal, and that it has been observed in the trunk of a tree lying in a mass of brown coal. There is no doubt whatever of this fossil resin having been originally a vegetable product. The numerous bodies found inclosed in it, as for example spiders, wings of all sorts of insects, a corolla perfectly blown, (contained in the collection of the Upsal Academy,) impressions of barks and branches, which are not uncommon, sufficiently prove that amber, like common resin, originally flowed in the state of a balsam, and that it afterwards hardened under the form of a resin. The following observations, if it is needful, would furnish additional proof of the origin of amber.

This resin contains at least five different substances: 1st, an odoriferous oil in small quantity: 2d, a yellow resin intimately combined with this oil, and which readily dissolves in alcohol, æther, and the alkalies; which is very fusible, and resembles common resins not of fossil origin: 3d, a resin difficultly soluble in cold alcohol, better in boiling alcohol, from which it separates on cooling in the form of a white powder, and which dissolves in æther and the alkalies. These two resins and the volatile oil, which æther extracts from amber, form after the evaporation of the æther upon water a natural viscous balsam, of a strong smell and a bright yellow colour, which subsequently hardens, preserving a portion of its odour. There is every reason to suppose that this body is precisely what amber originally was, but still perhaps less rich in essential oil than then; and that the insoluble parts of amber have been formed by time from the alteration of this balsam, a portion of which has been enveloped and defended from further alteration. The fourth substance contained in amber is succinic acid, which is dissolved with the balsam by æther. The fifth substance is insoluble in alcohol, æther, and the alkalies, and bears some relation to the matter which John has found in gum-lac, and which he has designated by the name of principle of lac (*lackstoff*;) this is formed in the greatest quantity when this resin is dissolved by an alkali, and bleached by chlorine and precipitated.—*Annales de Chimie.*

Artificial formation of Urea. By M. F. WOHLER.—M. Wohler has already shown, that when cyanogen is made to act upon solution of ammonia, there are obtained, besides several other products, oxalic acid, and a white crystalline substance, which occurs also whenever the attempt is made to combine cyanic acid with ammonia by double decomposition. On prosecuting his inquiries, M. W.

found that by the combination of cyanic acid with ammonia, urea was formed; this is a remarkable fact, as offering the artificial formation of organic matter, and even animal matter, by means of inorganic principles.

The white crystalline substance is most readily obtained by decomposing cyanate of silver by a solution of muriate of ammonia, or cyanate of lead by liquid ammonia; it is colourless, transparent, and crystallizes in the form of small rectangular quadrilateral prisms without any distinguishable pyramids. Neither potash nor lime evolves any trace of ammonia from this substance. Acids do not, as with the cyanates, disengage either carbonic or cyanic acid: it does not, like the cyanates, precipitate the salts of lead and silver; it is therefore evident that it contains neither ammonia nor cyanic acid. Most acids have no marked action on this substance, but the nitric acid when added to a concentrated solution gives a precipitate in the form of brilliant scales. These crystals are extremely acid, and were at first supposed to be a peculiar acid, but when decomposed by bases, nitrates of those bases were obtained; and by alcohol, the white crystalline matter was obtained unchanged in its properties: these properties, when compared with those of pure urea obtained from urine indicated that this substance, or cyanate of ammonia, is absolutely identical with urea; a conclusion which is strengthened by the properties assigned to urea in the writings of Proust, Prout, and others. M. Wohler states some facts with respect to urea (and also with regard to this artificial substance,) which he says have not been previously noticed. When natural or artificial urea is decomposed by heat, there is produced, besides a large quantity of carbonate of ammonia, towards the end of the operation a smell of cyanic acid resembling that of acetic acid, precisely as occurs during the distillation of cyanate of mercury or uric acid, and especially urate of mercury. By the distillation of urea, a white substance is also obtained, the properties of which are under examination.

If cyanate of ammonia be similar to urea, then the composition of the former as obtained by calculation should resemble that of the latter; assuming one atom of water in cyanate of ammonia, as in all ammoniacal salts which contain any, and adopting Prout's analysis of urea as the most correct, it consists of

Azote	- - - - -	46.650	4 atoms.
Carbon	- - - - -	19.975	2
Hydrogen	- - - - -	6.670	8
Oxygen	- - - - -	26.650	
		99.945	

Cyanate of ammonia should consist of 56.92 cyanic acid, 28.14 ammonia, and 14.74 water, which give as its elements:

Azote	- - - - -	46.78	4 atoms.
Carbon	- - - - -	20.19	2
Hydrogen	- - - - -	6.59	8
Oxygen	- - - - -	26.64	

By the combustion of cyanic acid by means of

oxide of copper, two volumes carbonic acid gas, and one volume of azote are obtained; but by the combustion of cyanate of ammonia, there should be procured equal volumes of these gases, which is what Prout actually found in the combustion of urea.—*Annales de Chimie*.

Cyanic Acid.—This acid has recently been obtained in a solid form by M. Serullas; it is white, insipid, susceptible of crystallization, reddens the greater number of blue vegetable colours, is insoluble in alcohol, and nearly so in water. It is prepared by dissolving the perchloruret of cyanogen in water, evaporating to dryness, and to the complete volatilization of the hydrochloric acid. In the reaction which takes place during this process, a part of the water is decomposed, the hydrogen uniting with the chlorine is converted into hydrochloric acid, while the oxygen entering into combination with the cyanogen forms cyanic acid.—*Jour. de Chimie Médicale*.

New Publications.

Précis analytique de système de M. le docteur Gall, sur les facultés de l'homme et les fonctions du cerveau, vulgairement cranoscopie.

Recherches Anatomiques, Physiologiques et Pathologiques sur le système veineux, et spécialement sur les canaux veineux des os; par M. G. Breschet, docteur en Médecine, chef des travaux anatomiques de la Faculté de Paris, &c. &c. Sixième livraison.

L'Hystérotomie, ou l'amputation du col de la matrice dans les affections caucéreuses, suivant un nouveau procédé, avec la description de l'hystérotome et de plusieurs autres instruments nouveaux présenté à la Faculté de Médecine de Paris; par Columbat, de Vienne.

Du degré de Compétence des Médecins dans les questions judiciaires, relatives aux alienations mentales, et des théories physiologiques sur la monomanie; par Elias Regnault, avocat à la Cour Royale de Paris.

Recherches et expériences sur les poisons d'Amerique, tirés des trois règnes de la nature, et envisagés sous les rapports de l'histoire naturelle, de la physiologie, de la pathologie et de la chimie, avec un essai sur l'empoisonnement par les miasmes des marais, le mal d'estomac des negres (cachexia africana,) et les maladies qui ressemblent aux empoisonnements; pour servir à la toxicologie générale du continent d'Amerique et des Antil-

les; par J. B. Ricord-Madianna, docteur en Médecine, &c. &c.

Military Medical Reports, containing Pathological and Practical Observations, illustrating the Diseases of Warm Climates. By James M'Cabe, M.D. &c.

Plain Observations on the Management of Children during the First month. London, 1828.

Medical Essays on Fever, Inflammation, Rheumatism, Disease of the Heart, &c. By Joseph Brown, M.D. &c.

A Manual of Modern Surgery, founded upon the Principles and Practice lately taught by Sir Astley Cooper, Bart. F.R.S. and Joseph Henry Green, F.R.S. Edited by Thomas Castle, F.R.S. &c.

Elements of Descriptive and Practical Anatomy, for the use of Students. By John Quain, A.B. M.B. Member of the Royal College of Surgeons, and one of the Lecturers on Anatomy in the Medical School, Aldersgate-street.

Literary Intelligence.

An Essay on the Operation of Poison upon the Living Body, by Mr. Morgan and Dr. Addison, of Guy's Hospital, will very shortly be published.

A Manual of the Anatomy, Physiology, and Diseases of the Eye and its Appendages. By S. J. Stratford, Member of the Royal College of Surgeons in London: Surgeon to the Dispensary for Diseases of the Eye; and late senior Assistant Surgeon of the 72d, or Duke of Albany's own Highlanders.—8vo.

Elements of Chemistry. By Andrew Fyfe, M.D., F.R.S.E. In two vols. 8vo., boards, and numerous engravings. Pp. 513 and 520.

Mr. Amesbury has in the press a work on the Treatment of Fractures, in which he has shown that the common opinion entertained, that fractures of the *neck of the thigh-bone cannot be united*, is erroneous. He has detailed his mode of treating these cases so as to restore to the patient the natural powers of the limb without deformity. The work will be published in a few days, in 1 vol. 8vo.

Mr. Richards has in the press a Treatise on Nervous Disorders, with Observations on Physical Sympathy, and a Dissertation on the best Dietetic and Medicinal Remedies.

Mr. Ashwell has in the press a work on Parturition, with plates.